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FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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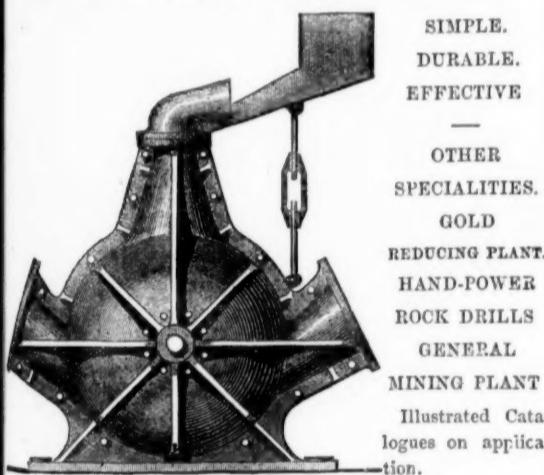
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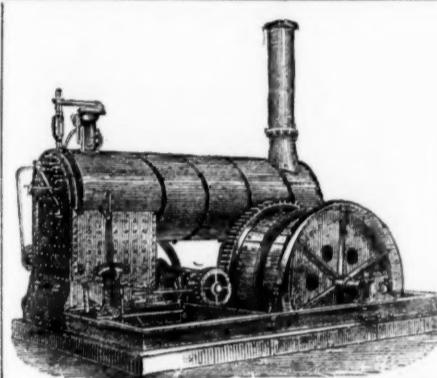
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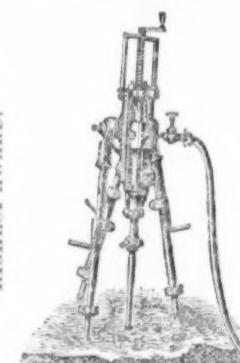
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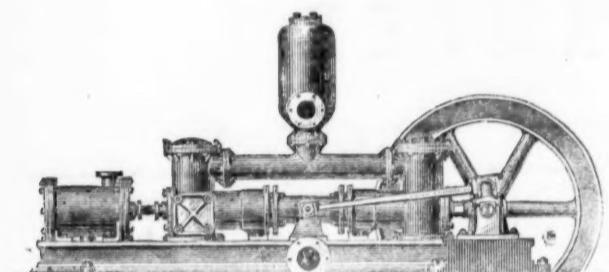
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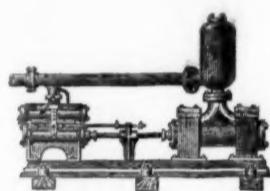
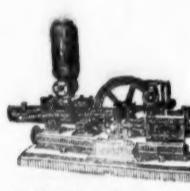
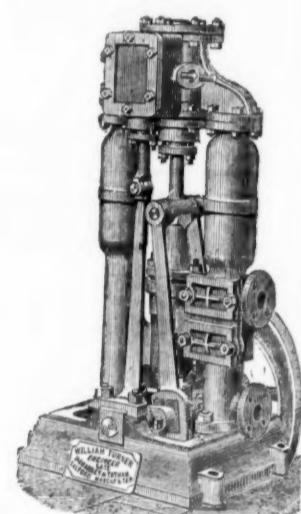


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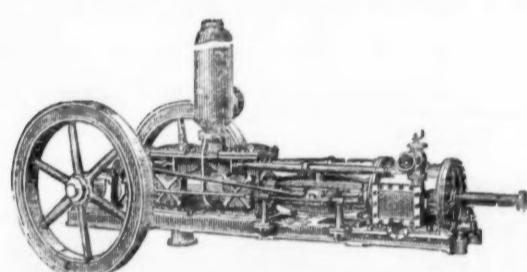
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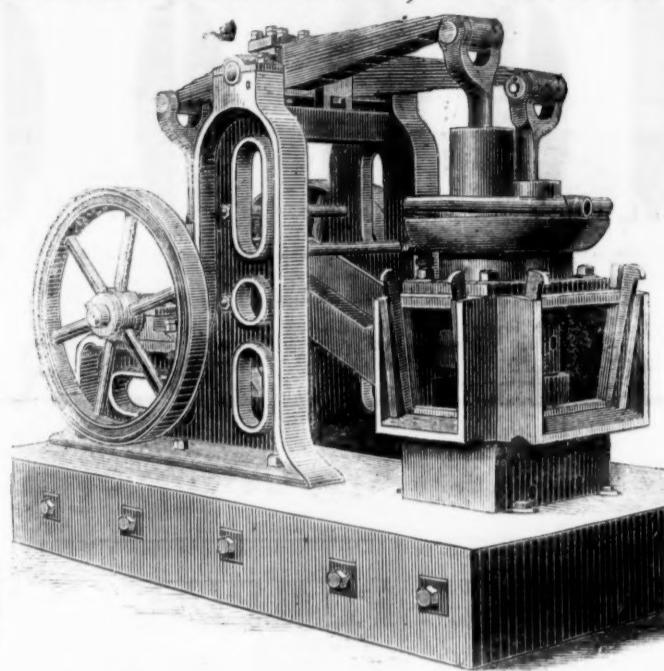
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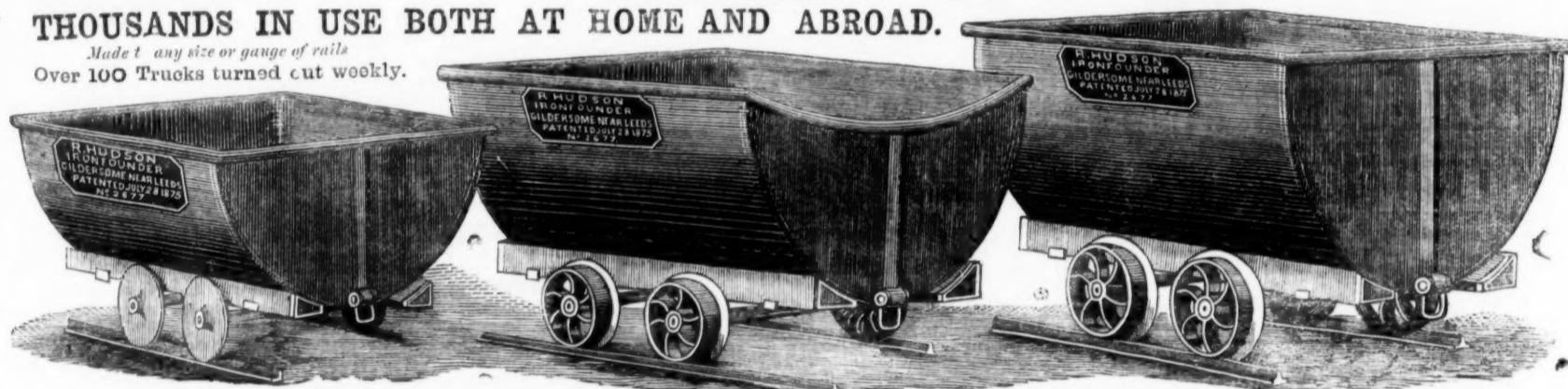
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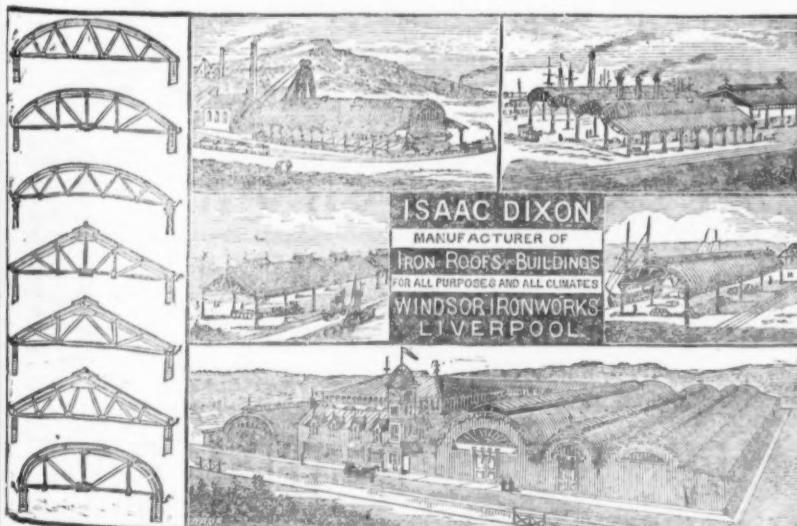
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Over 100 Trucks turned out weekly.



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THE "BEAUMONT" PATENT PERCUSSIVE ROCK DRILL.

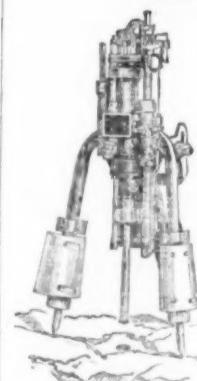
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The "BEAUMONT" DRILL is now offered to the public.

For the last three years it has been solely used with complete success by the Aqueous Works and Diamond Rock Boring Company (Limited), and Messrs. Beaumont and Co. in their several large contracts.

During this time it has been improved and developed as to make it without doubt the best Percussive Rock Drill offered for Tunnelling, Mining, or Quarrying Work.

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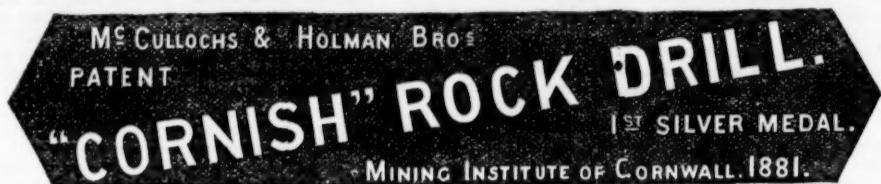
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Hydraulic Pumps.
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APPLICATION.



This machine has been constructed after a long practical experience in the requirements necessary for Cornish mines. The result has more than realised our expectations. Our chief objects in view were GREATER DURABILITY and LESS LIABILITY TO DISARRANGEMENT, but it has also proved itself MORE EFFECTIVE. (Vide Report.)

CAMBORNE, 8TH DECEMBER, 1881.

SIR,—Having been requested by the Council to superintend the Rock Drilling Machine Contest, held at Dolcoath Mine to-day in connection with the above Institute, I beg to hand you the following report:—

The competing machines were the "Barrow," the "Cornish," and the "Eclipse"—each was fixed on the same mounting bar, and bored into the same stone. The result of the boring were as follows:—

Name of Machine.	Diameter of cylinder.	Diameter of Drill.	Time boring.	Depth bored.	Cubic inches of ground cut.	Cubic inches cut per minute.	Mean pressure per square inch.	Remarks.
Cornish.....	3½	2	1 15	4½	14·1	—	—	
".....	—	1½	55	9	21·6	—	—	
Total.....	3½	—	2 10	13½	35·7	16·4	61	
Eclipse.....	3½	2	40	—	—	—	—	Ran into Cornish hole; hole not properly watered.
" second try	—	—	2 0	1	3·1	—	—	
" third try	3½	2	2 35	11½	35·3	13·6	60	
Barrow.....	4	1½	15	—	1·2	—	—	Gland to mounting bar broke.
".....	—	—	2 0	8½	19·18	—	—	
Total.....	4	1½	2 15	8½	21·0	9·3	60	

I am, Sir, your obedient servant,

JAMES HOSKING, M.E.

To R. H. Williams, Esq., C.E., President of the Mining Institute of Cornwall.

Address—
HOLMAN BROS.,
CAMBORNE FOUNDRY AND ENGINE-WORKS, CAMBORNE, CORNWALL.

The Only Knapping Motion Stone Breaker and Ore Crusher.

AWARDED THE ONLY SILVER MEDAL FOR MECHANICAL EXHIBITS
AT THE ROYAL CORNWALL POLYTECHNIC SOCIETY,
FALMOUTH, SEPT., 1881.

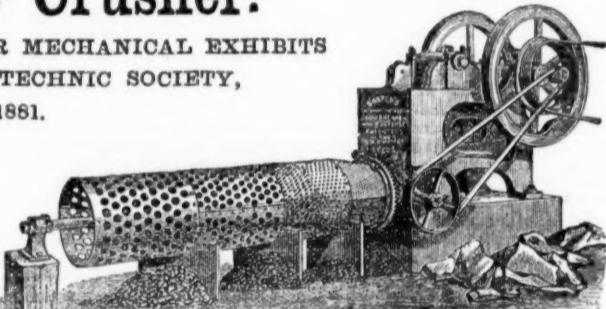
READ THIS—

Enderby Granite Quarry, Sept. 23, 1881;

SIR,—In answer to your enquiry respecting your 12 by 8 Stone Breaker, we break on an average 60 tons of stone per day. The percentage in chippings and dust is under 10 per cent., which we consider is extremely small, considering the size we break our stone to, the machine making 60 per cent. X X, or 1½. The driving shaft never gets hot. We can work it the ten hours without stopping.

Yours truly,

RAWSON AND RAWSON



GUARANTEED NO INFRINGEMENT OF ANY OTHER PATENT.

These Machines turn out the same amount of work with less than half the power, and make a better sample of Road Metal, with 50 per cent. less waste, than any other machinery, and for Crushing Purposes they are still more advantageous, as the sudden action entirely dispenses with the clogging when used for crushing softer materials, and thereby saves many breakages and a great waste of power. There is also a saving of fully 75 per cent. of lubrication required over the Blake Machine, and as a proof of this, our driving shaft never becomes heated. We are also prepared to guarantee our driving shaft from breakage in any of our Knapping Motion Stone Breakers.

We have already supplied our Mach'nes to Derby, Harrogate, and Falmouth Local Authorities; besides several Quarry Owners, Contractors, Plaster Manufacturers, &c.

FOR FULL PARTICULARS ADDRESS TO THE PATENTEE AND SOLE MAKERS,

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PATENT WIRE TRAMWAYS

Of all descriptions on the Single and Double-Rope Systems; Self-Acting, and Driven by Steam, Water, or Horse Power.

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ENGINEER AND MANAGER TO THE OWNERS OF THE PATENTS FOR WIRE ROPE TRANSPORT.

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JOHN SPENCER,

Tube Works, West Bromwich, and 3, Queen Street Place, LONDON, E.C.
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TUBES AND FITTINGS for Gas, Steam, and Water; Galvanised, Enamelled, and Hydraulic Tubes; Boiler Tubes and Fittings; Gas Fitters' Tools; Brass Cocks, &c.

ANTI-CORRODO TUBES AND FITTINGS COATED BY BARFF'S RUSTLESS PROCESS.

TUBES

FOREIGN MINING AND METALLURGY.

The French iron trade has presented scarcely any change, work has continued abundant and the Paris market appears to present better tendencies. Merchants' iron has remained at about 81. 4s. per ton. The exports of iron rails from France in the first three months of this year are officially returned at 99,900 tons, as compared with 7900 tons in the corresponding period of 1881. The exports of plates in the first three months of this year are officially returned at 120,100 tons, as compared with 233,208 tons in the corresponding period of 1881. The import of iron minerals into France in the first three months of this year amounted to 327,550, as compared with 267,515 tons in the corresponding period of 1881, and 220,542 tons in the corresponding period of 1880. In the minerals imported into France in the first three months of this year Germany figured for 88,490 tons; Spain for 94,998 tons; Italy for 23,778 tons; Algeria for 89,084 tons; and Belgium for 27,867 tons. Quotations for iron have continued to fall in Germany, and the same may be said of pig, which is a good deal offered. It is difficult to carry through transactions in iron at a higher rate than 67. 15s. per ton. Even the best established German rolling mills would not be sorry to see orders come to hand, and attempts are being made to secure them. Happily German railways have still a good deal of work to give out.

The Belgian iron trade has experienced comparatively little change, and may be said to remain in an attitude of expectation. New orders come to hand very sparingly, and this prevents any advance in prices, but at the same time new work is offered in sufficient quantities to check any downward movement in quotations. Some works which are unemployed are offering their products below the terms generally current, but taking a general view of the situation it may be said that without being brilliant it does not indicate a probability of any very marked feebleness in prices. General important public works have been projected in Belgium. The canal from Mons to Charleroi will involve the construction of some iron bridges and sluices, and the Amblete Railway will also absorb a certain quantity of rails and accessories. Tenders are invited in Belgium for 23,000 tons of steel rails. The new Belgian steelworks recently established are expected to submit tenders on this occasion. Quotations have scarcely varied upon the Belgian markets, upon which English casting pig has been held with feebleness. Transactions in iron have been carried through with some difficulty in Belgium; at the same time a large contract is stated to have been signed on Chinese account. A special meeting of the shareholders of the Eich Forges Company has been convened to consider a proposal of the manager for the creation at Dudelange of an establishment for the production of pig, and its subsequent conversion into iron and steel. It is probable that a new company will be formed to undertake the proposed works, in which the Sydney Gilchrist Thomas process will be adopted.

There is little fresh to report with respect to the Belgian coal trade. The previously existing state of things is maintained without any very marked tendency one way or the other. The approach of summer makes itself felt, and imparts a little feebleness to the general tone. This is a circumstance which occurs regularly year by year. Deliveries are continuing with a fair amount of regularity. Notwithstanding this stocks are forming at pits' mouths. Coking coal has been in request, and has supported its price with firmness. Coal mining industry appears to be making constant progress in the Dortmund district. As a proof of this we may state that during the first quarter of this year the extraction of the Dortmund group amounted to 6,308,920 tons, as compared with 5,656,244 tons in the corresponding quarter of 1881. The difference in favour of the first quarter of this year will be seen to be no less than 652,688 tons. The production of the Dortmund district is also disposed of with a facility which keeps pace with the progress of the extraction. Thus the sales during the first quarter of this year amounted to 6,246,743 tons, against 5,612,008 tons in the corresponding period of 1881, showing an increase of 634,735 tons in the first quarter of this year. The current condition of the German coal trade as a whole is, however, scarcely favourable. The consumption continues considerable, but production is largely in excess of current requirements, so that considerable stocks have accumulated.

Contracts for additional trucks have just been let for the Belgian State Railways. The contract price was 8l. to 12l. per truck less than at the last adjudication; it is, however, right to remark that the conditions of construction were not exactly the same on the present occasion as those of the last contract. The number of additional coal trucks contracted for the Belgian State system was 2000. The largest proportion of the trucks is to be supplied by the Belgian Metallurgical Company. It was remarked that several Belgian establishments did not submit tenders. This abstention was occasioned by the fact that the establishments in question are so overdone for the present with orders that it is impossible for them to undertake new work unless long periods are allowed for the execution of the contracts concluded. The production of pig iron in Germany in the first quarter of 1882 is estimated at 244,000 tons, as compared with 220,000 tons in the corresponding period of 1881. The production of iron in Germany in the first quarter of this year is estimated at 148,000 tons, as compared with 127,000 tons in the corresponding period of 1881. The production of steel in Germany in the first quarter of this year is returned at 257,000 tons, as compared with 191,000 tons in the corresponding period of 1881.

NEW COPPER ALLOY.

The mere hardening of copper is a very simple thing to do, but Mr. A. GETCHELL, of Boston, U.S., claims not only to harden it but to convert it into an antifrictional and practically indestructible metal, which is so complete a conductor that it will not heat or ruck up under any circumstances, and its natural oiliness being increased by the process makes a great saving in oil, only one quarter of the oil being needed that is used on any other metal. For the boxes of railway carriages, steam-engines, and particularly those of ocean steamers, which require constant running and constant care, its non-heating qualities render it invaluable.

The copper is first heated to about redness in a crucible or furnace, and there is then added a composition which for 25 lbs. of copper consists of potash (or soda) 1½ lb.; alum, 1 lb.; bone dust (or other phosphate), ¼ lb.; zinc (or tin), ½ lb. After the mixture of copper and composition is melted the slag is removed, and then the whole is ready to pour. It is desirable to have the metal covered with charcoal after the slag has been removed, and while pouring to prevent oxidation. The metal after being thus treated may be run directly into moulds. The copper treated as above set forth will not only be hardened but will have density and toughness in a marked degree. The resulting metal will have lubricity—that is, a smoothness like oiliness. All of these qualities, and the last-named particularly, make the metal especially useful for boxes and other bearings in machinery.

HOLLOWAY'S PILLS—CURE FOR INDIGESTION.—Indigestion with flatulence of the liver, is the curse of thousands who spend each day with accumulated sufferings, all of which may be avoided by taking Holloway's Pills according to their accompanying directions. They strengthen and invigorate every organ subservient to digestion. Their action is purifying, healing, and strengthening. They may be safely taken without interfering with ordinary purgatives, or requiring much restriction in diet. They quickly remove noise and giddiness in the head, and dispel low spirits and nervous fears. These balsamic pills work the cure without debilitating or exhausting the system; on the contrary, they conserve and support the vital principle by substituting pure for impure blood.

Original Correspondence.

QUICK SILVER.

TO APRIL 30, INCLUSIVE.

	1881.	1882.
Season's Import entries, bottles, about	30,389	about 35,450*
Imports from January 1 to April 30, 1882, about	30,461	
Imports " " 1881, " 30,389		
Exports " " 1882, " 11,133 "		
Exports " " 1881, " 7,479 "		
Stock to April 30, 1882, about 103,000 bottles.		

London, May 9. — J. BENNETT BROS.

THE GOLD AND DIAMOND FIELDS OF SOUTH AFRICA.

SIR.—There has never been a time in the history of these diamond fields when money has been so scarce, and the banks are putting on the screw with a vengeance. The scheme for floating the whole of the De Beers Mine in Europe for over 3,000,000/- is (according to notice) deferred for the present. I never believed in the *bona fides* of the proposed company, and am not disappointed. At Kamfersdam they have reduced the expenditure to a minimum; they continue to find a few diamonds, but not sufficient to pay expenses. I think it a great pity they do not work the property with more vigour. At Otto's Kopje it is reported that several good diamonds have been found. The diamonds that were shown me as having been found at Otto's Kopje bear a close resemblance to the Bultfontein diamonds. At Jagersfontein there is not a single company that is doing any good; there is a great deal of distress in the place, and a large number of miners are out of work. At Koffyfontein the whole mine is steadily improving, and there is every prospect of its turning out to be a dividend-paying mine eventually. At Bultfontein there is no improvement in the general management, and consequently no dividends. At Dutoitspan the Anglo-African Company are doing very well; but if they could get some kind of machine to crush the blue (diamond soil) as soon as it is raised, instead of waiting for it to disintegrate through the influence of the atmosphere, they could pay much better dividends. The Griqualand West Company are also doing well, and ought to pay a good dividend for the half-year; this is a good property.

In the Kimberley Mine the fallen reef is as troublesome as ever. The Mining Board have just let a contract to Mr. Jones to remove a portion of the east end at 2s. 6d. per load of 16 cubic feet; as Mr. Jones is a good practical man he ought to do very well out of his contract. The French Company are working splendidly, and will soon overcome the worst of their reef troubles, when there will be close competition between them and the Central Company as to which will declare the largest dividends. The Central Company have had a fall of blue from the north side but it did not do any damage; the whole of the fall is rich ground, and has already produced one diamond of 118 carats, a little off-coloured. One claim the Central Company are working near the centre of the mine is turning out diamonds literally by the handful. There is great talk about amalgamating the whole of the Kimberley Mine, and forming it into one gigantic company; but in my opinion such a scheme is utterly impracticable, because there is a great deal of ground in the Kimberley Mine that could not be taken over by the French, Central, or British companies even if it could be had for nothing, because it is not worth paying taxes on, and the persons who are holding it would want a big price for it, as they are merely waiting for a catch.

There are some good diamonds being found at a new place on the banks of the Vaal river, about 10 miles east of Hebron. As diamonds are found on these fields very different in form to anything that I have ever seen or read about in any other part of the world it may be interesting to some of your readers to learn from time to time something of the various forms in which diamonds are found. Twin diamonds are very common; but the most interesting I have seen is a cluster of eight from Bultfontein. Each diamond was as round as a marble, of good quality, and clustered like a small bunch of grapes. Diamonds as round and smooth as a marble are found in all the mines, often encased in a thin shell of carbonate of lime. Diamonds encased in carbonate of lime are sometimes thrown away as limestone pebbles. I remember a Mr. Norris finding one in the gravel walk in front of his house, which had been previously thrown away, and would not have been discovered but for the breaking away of a small portion of the lime shell. Most of the perfectly round diamonds are of very good quality. It is also not uncommon to find a good octahedron-shaped diamond quite hollow—in fact, a mere shell, and not unlike what it would be if it were worn out by the constant dropping of water.

The following companies declare dividends this month:—The Standard Diamond Mining Company of Kimberley Mine will declare an interim dividend of 10 per cent. The North-East Diamond Company of Kimberley Mine will declare a dividend on the 7th inst. out of reef work. Schwab's Gully, of De Beers, will declare a dividend on the 17th inst.—7 per cent. The Ne Plus Ultra Company, of Dutoitspan, will declare a dividend on the 15th inst. The Barnato Exchange Company have issued a report declaring a dividend of 4 per cent. for three months.

In the Transvaal things are almost as bad as they can be. Commandant Ferreira, after plundering Kalafin, returned to Pretoria. He is now taking in a large additional supply of ammunition for the purpose of doing some more fighting, but up to the present his destination is kept secret. The executive of the Transvaal say—"They intend to inspire a salutary respect for the power of the Government." If shooting Kaffirs is calculated to inspire respect there is no doubt they will succeed. The Potchefstrom correspondent of the Diamond News (April 11) says—"Affairs do not seem any more promising on the Western Border, as another batch of men have been commanded from here, and several districts have each to send 150 men, who leave for the front to-morrow. The townspeople have been waited on for supplies again, at an average of 4/- in cash this time. Several of the men came down on leave for a few days; but it is impossible to get at the truth of the matter, as their tongues have either been tied or bought, and it is difficult to reconcile their statements that there is no war, but peace, and that the Kaffirs are willing to pay, with the fact of these fresh men being sent up in haste; however, time will tell. In the meanwhile trade is nowhere, and the men are beginning to look very anxious about the future. We expect our claims to be paid out during the week; but so many gaps are open to swallow these amounts that they will not affect the present trade much. The election for a President seems likely to be stayed off for a time during these troubles. The difficulty seems to be the choice of a man willing and able to fill the position."

From the gold fields I find that the treatment of the English diggers by the Boer Government is disgraceful in the extreme. The following is from the Pretoria Advertiser—"The Attorney-General, Dr. Jorrison, has been appointed Special Commissioner to proceed to the gold fields to investigate the claims of the diggers for compensation from the concessionaire, Mr. Benjamin. Without possessing the gift of prophecy we can predict an unsatisfactory termination to his mission." Many of your readers may not know who Dr. Jorrison is. I say without fear of contradiction that Dr. Jorrison was the chief instigator of the late war. It was Jorrison who conceived the idea of robbing the diggers, and selling their honest rights to a few unscrupulous adventurers. It is Dr. Jorrison who is a sleeping partner in most of those concessions, and it is Dr. Jorrison who has appointed himself to act as Special Commissioner between himself and company and the Lydenburg diggers. The following is from the Pretoria Advertiser, and is a fair specimen of the compensation offered—"As instances of the compensation offered by Mr. Benjamin I will mention two cases. One young man, whose claim is valued by miners on the spot at 2000/-, is offered 250/- by the concessionaire; and another, who was offered 5000/- for his claim a month before the concession was granted, is now offered, as compensation, by Mr. Benjamin, the handsome sum of 150/-." The Commissioner goes to the gold fields to see that the diggers get fair compensation for their direct losses, in terms of the concession. Will the loss of a

property for which a sum of 5000/- has been offered be considered by the commissioner a direct loss?"

Lord Kimberley's statement in the House of Lords "that the Transvaal Government were doing all in their power to sustain the neutrality of its territory" is positively false, and such information has been sent only for the purpose of deceiving the English people. It is the Boers who are at war with the Kaffirs, that is if their treatment of the Kaffirs can deserve such a mild term as war. England is being greatly deceived by the few intriguing adventurers who govern the Transvaal. There has been no news from Mr. D. Francis' party at the Tatin during the past week. The new gold fields at the Crocodile River turns out to be a dead failure. At Spitzkop three claims are paying expenses, and two leaving a small profit. At Pilgrim's Rest most of the late arrivals are down with fever. The claims of Lockheed, Prettyjohn, and party are turning out about 500/- worth of gold per month. None of the new ground is worth anything.

The wagon-load of silver-lead ore referred to in my last has arrived here from Bronkhorst Sprint; it is very coarse dredge-work, a ton of which would in all probability dress up to about 1 cwt. of galena, worth about 70 per cent. for lead, and at the rate of about 38 ozs. of silver to the ton. It is largely intermixed with iron, and if it were taken from a regular lode it would be considered in a place like Cornwall or Devon a moderately fair prospect. There is also a lode of quartz which shows traces of gold; but, speaking generally, the quartz in my opinion is not of a favourable character.

There are likely to be so many attempts to gull the British mining public as to the richness of the Transvaal that it is necessary to place matters before them in their true light. The following are extracts from two letters received from the Transvaal yesterday. The first says—"I hear of only one new concession this week, that of gold mining rights to Mr. F. S. McHattie for his farms in the Lydenburg district. The monopoly business, however, will soon revive when it is known how easily the concessions may be obtained. There is, however, just the possibility that if Government deal only on cash principles they will make more out of these concessions than the concessionaires. If each individual who has got a concession tries to raise a company such a flood of gold mines in the market will look—what shall I say?—fishy, when unaccompanied by anything more substantial than a few specimens; and the probability is that not one of the lot may be floated. Well, I should not shed a great amount of tears if such were the result; but I am afraid I should not bless the Government, whose insane folly has damaged the country's prospects for many years to come."

In the second it is remarked—"There is a tendency also to indulge in extravagant statements about the prices offered by companies for the concessions, and also for sub-concessions to trade on the fields when they are opened, which savours to us of gas, and which gives rather an unsubstantial aspect to these embryo gold mines. We have no doubt there are good payable fields in the Lydenburg district; but we also have a strong belief that there will be one or two specie floated in connection with them which will prove a dead loss to all except the promoters. Meanwhile, digging is suspended on these new fields, only those who would work as servants having a chance of doing anything. It is, therefore, a matter of doubt when, if ever, they will benefit either the district in which they are situated or the country at large." CORRESPONDENT.

Kimberley, April 13.

THE GOLD MINES OF INDIA.

SIR.—Capt. Rogers, in his letter in last week's Journal, clearly attempts to imbue your readers with an idea that he is a somewhat remarkable personage in having "proved beyond the shadow of a doubt the existence of lodes in the Colar gold field which will pay," and he must certainly be indulging himself with some lofty flights of imagination if he thinks that such statements will be believed after his most ignominious failures to prove his assertions in the shape of actual returns, and more especially so after the easy and nonchalant manner in which he has refused to reply to "conjectural and ridiculous remarks" contained in my letter of April 15. "A galled jade will wince" seems to be very applicable here, as Capt. Rogers has refused to go forward an inch to make good his assertions about the "paying lodes" or refute my "conjectural and ridiculous remarks." I feel certain, in common with Capt. Rogers, that forthcoming results will be "disagreeably surprising" to many. In some of the statements in Capt. Rogers' letter last week I notice that he has not yet discarded his schoolboy tricks; he says "the invitation was certainly given" to me to go underground in the Mysore Mine. This I deny *in toto*, neither was I shown the heaps of quartz reported to be on the surface, although I particularly requested to see them, but the hundreds of tons of quartz particularly kept out of my sight. As a practical miner I made no attempt to go underground where I had no special commission or invitation to go, and for the same reason I did not attend at the inauguration of "regular crushing" at the Mysore Mine. This I do know that, although some of "the other agents" who did go underground there, and "expressed themselves pleased with what they saw," others who went underground as well, came up again as sceptical as I was who did not go down at all, and even when I knew that other agents had been underground there had no desire to risk a refusal on the matter, which I certainly should have received had I asked to go down. Captain Rogers' statement "why the gravitation stamp was not erected" is very vague indeed. I think the principal causes why it was not completed were the limited supply of quartz and more limited supply of gold obtainable for it to manipulate upon. When the trial crushings with the mortar-mill were in progress Capt. Rogers was very elated at the prospective results, and after the first failure he placed sideboards to the pan for the next and subsequent trials; but after his attempts and failures to produce any tangible results it was a somewhat tender point to touch when any allusions were made to him concerning these trials, and even then he never made any mention of "preparing samples for the assayer" with it. I dare say Capt. Rogers' memory is so defective that he has forgotten the many little jokes which were passed at his expense over this same little episode; if he has forgotten it I have not. "He who does not strictly adhere to the truth should have a first-class memory" is strikingly illustrated in the following:—Capt. Rogers left the Mysore Mine on or about Jan. 18. On April 13 he writes—"I was unfortunately leaving the mines before we could work the blanket sand in the new amalgamating mill." On April 27 he writes—"The new amalgamating mill did not commence working until December month, and then on blanket sand; let me again tell Captain Bray the quartz stamped was gold producing." To anyone having a practical, theoretical, or a book knowledge of gold treatment the reliability of Capt. Rogers' statements will be very obvious, and the value of these statements as well as the real worth of the mine may be very readily inferred on comparing the reports issued with the present state of affairs at the mines.

Capt. Rogers seems very strongly impressed with the idea that your readers are apt to accept as truthful any statements made with an emphasis when he thinks they will accept his statements concerning the Elephant stamps. The word "coercion" seems to grate very harshly on Capt. Rogers' nerves, and the slightest hint at it seems to touch his tender susceptibilities. I have a list now before me of all the principal mining localities in Russia, Austria, and other places; but I cannot find any mention of gold or even any other mineral being found in paying quantities in basaltic formations, and I do not think that even the Mysore Mine will prominently figure as an exception to that list. When the Mysore Mine turns out gold enough to require an amalgamating machine of any kind I may then think of taking out a patent for an "amalgamating wheelbarrow." I fear though that, even should gold be reported to be there in sufficient quantities to require amalgamating, before I could get out to India again to work it the whole would be extracted, and consequently my patent, time, and expense would be thrown away. When Capt. Rogers and his allies can build up around me a series of forts of steady returns and regular dividends I will capitulate manfully, and acknowledge myself beaten; but until then I prefer to remain in the impregnable position I have taken up in the matter—all the assaults, feint or otherwise, all the sensational reports, or the stray shots which may be fired from the enemy's camp will not cause me to waver an

inch in my position, and I think I can well afford to await the promised results.

CHARLES F. BRAY,

Late Manager Great Southern Mysore Mine.

AUSTRALIAN VERSUS INDIAN GOLD MINING.

SIR,—Whilst thanking you for inserting my letter on Queensland Gold Mining in the Journal of June 25, 1881, I ask for space now to say a few words as to my surprise at reading in various papers that there was a damp upon the placing of Australian gold mining companies on the London market in consequence of the failure of returns, not from Australia, but from certain Indian mines in gold. There seems something defective about this chain of reasoning. To me it appears like hanging Peter because Paul commits a murder. I have no interest in defending Australia on this head. Her yield of between two and three hundred millions sterling in gold since 1852 speaks for itself. It matters nothing to me (who owns no gold properties) whether they be appreciated or not. At home my chief purpose in writing is to express wonder at any one ever embarking capital in Indian gold mines.

I have never been in or near India, and know less of that country generally, than does the average educated Englishman; but I can draw an inference as well as most people can. I know that India contains 250,000,000 millions of people, that it has been settled for thousands of years; that its great men possess valuable jewels and gold in abundance, that the gold was the produce of India, that it could not have been mined from a depth, or crushed by steam power from quartz lodes in the primitive days and centuries of the past, and yet there is an abundance on the persons and in the pockets of the Hindoo and Moslem magnates. The inference, therefore, is that the shallow alluvial soil of India has been rich in gold in days gone by, and such being the case the reefs whence it came must be poor or else barren so far as gold is concerned. I should almost as soon have thought of mining for gold in the moon as in India as a speculation.

Queensland, with its average of 40 dwts. of gold to the ton of quartz, is the best place in the world for profitable gold mining. New South Wales has a much lower average per ton, and Victoria shows only 9 dwts. average per ton; but then these southern colonies have been, like India, rich in alluvium, and the reefs are partly emptied of their treasures. Mining for lode tin in Queensland is even more profitable than gold mining, which latter is far more suited to English capital (satisfied with a moderate percentage) than to Australian capital, which is not so satisfied, seeing what varied choice of openings it has. Returning to my habit of drawing inferences, I conclude that even the best gold mining can not be so profitable as tin mining and other pursuits are. We know that nearly everything during the last 50 years, such as flour, wool, sugar, tin, copper, &c., has fallen in value, but gold has not done so, despite its heavy yield. What then is the inference except that these other commodities yield plentifully to labour, while gold, despite its enormous prizes to the lucky ones, acts as a lure to so many unsuccessful ones that their labours spread over barren ground in the vicinity of rich ground cause every ounce of gold to cost 70s. to raise it even in Australia, and I wonder, by the way, what the gold of India has cost to raise per ounce the last year or two? The Wilde River lode tin field in Queensland is an improved duplicate of the County of Cornwall, and the only one in the world by the way; and what is better is it has not been rifled, as Cornwall has been for the last 2000 years.

As a proof of the general diffusion of gold in Queensland I may quote the partly metaphorical words of an eminent English chemist and analyst who has travelled this colony. He said to us in a public lecture—"You eat gold, you drink gold, you breathe gold, you sleep on gold, it permeates your country everywhere." And small impalpable gold is quite capable of being drank in water, mixed in bread, and no one the worse or the wiser; for, as I write I have in a box at my elbow, gold in sandstone, gold in syenite or pegmatite (not granite), gold in basalt or diorite, gold in limestone, gold in tourmaline, gold in black slate, gold in agate, gold in serpentine and asbestos, gold in the petrified debris of hot-water springs, gold in the arsenate, sulphure, and carbonate of lead, gold in the sulphure, green carbonate, blue carbonate, chloride, silicate, and black oxide (not the red oxide, of copper), gold in antimony ore, in bismuth ore, and zinc blends, gold in Iceland spar, pearl spar, and calc spar, gold in limonite, mudi, &c.; and all this is visible ponderable gold, not that which yields to assay only. It is not even merely incrusted on the outside of odd pieces of rock, but visible in the heart of newly fractured prisms of black tourmaline, of basalt, &c., and how it got there goodness only knows. I have a drawer full of prize medals and certificates that I have received for this collection at various exhibitions, and I may possibly one day send it to the Queensland National Bank in London to convince by eyesight those who may be sceptical of such wonders in geology and mineralogy.

I made an effort last June to induce owners of Queensland gold mines to offer them in London, but in vain. A property that would be worth only 5000/- to buy to-day might, long before a reply was received from London, where these matters do not move with lightning speed, be rendered, by discovery of a fresh patch of gold, worth 50,000/-, and the Government regulations, which will admit (in order to prevent such contingency of fresh discovery) of work being suspended on a mine for three or six months, would not admit, without voiding the title to the mine altogether, of its being registered or exempted from work for the lengthy period that is required to ensure a market in London. The task is a herculean one, and the man who sells a Queensland gold mine in London deserves a high reward. The undertaking has no charms for N. BARTLEY.

Brisbane, March 22.

P.S.—The postponement of the mail enables me to say a few supplementary words to the effect that when I first saw Indian gold mining companies advertised in English papers I fairly shuddered. I foresaw, like a Hebrew seer of old, the whole subsequent programme, the over-confident English mining investor ever eager after what is close at hand and shy of what is distant from England, be it other merits what they may: the inevitable collapse that would follow, and the sweeping condemnation of innocent Australia and its gold mines. I did not care for Australia loss, which is nil, but I was sorry for the English investors in India. People who live in England have a very faint idea as to how accurately their measure is taken in foreign parts, and how universally known, from long experience, is their tendency to grasp greedily at every bubble that is plausible, and to fight shy of every solid genuine undertaking, and it is no wonder at all that they get their fill of the former, and are never even asked to nibble at the other.

TIN MINING IN AUSTRALIA.

SIR.—The late discoveries in Queensland of what are said to be undoubted lodes of tin stone, and also the finding of rich alluvial leads, under a second bottom, and at much greater depth than hitherto in our own New Zealand tin-fields, is causing a revival and a decided interest to be taken in this special branch of mining again; and as the recently extended, and yet to be extended, railway lines make carriage so much cheaper, and access of investors so much easier, it is more than likely that the larger amount of working capital and energy also thus brought to bear will result in a more permanent as well as a larger yield of metal from the mines of Australia generally. Both Victoria and South Australia are now investing with us and in Queensland, and this fact has done more to wake us up into a belief in our own properties than perhaps anything else could do. The few following paragraphs from the Town and Country Journal show that tin is also being worked in the west (on the Victorian boundary almost), as well as in the North and far North, and rumours reached Sydney last week of discoveries of alluvial tin some hundreds of miles away in a different direction, so it is very evident we have not to wholly rely on one field.

R. D. A.

TIN MINES.—Both in New South Wales and Queensland the tin-fields reports are better than for some time past. It will be seen, too, from the reports in this issue, that tin stock is more inquired for, and is improving in value. The Albury Banner of the 17th mentions that a joint-stock company, under the name of

The Tallangatta Tin Mining Company, has been formed to work some of the ground in the neighbourhood of Koetong Creek. A portion of ore obtained from the claim has been assayed, with a result of 93 per cent. of tin being obtained. A lease of 50 acres has been obtained. It is proposed to work the claim wholly by water power, of which an ample supply is obtainable all the year round, and throughout the entire claim. Five sluice heads have been registered, and there is a fall at the lower end of the claim over which the tailings will be shot through a tail-race. By this means the tin will be separated with the smallest quantity of labour, and thus large profits are anticipated. Mr. Norman Taylor, late field geologist to the Governments of Victoria and Queensland, recently inspected the lease, and has reported upon it. From Mr. Taylor's report we extract the following:—"In the creek beds the depth of sinking is from 6 ft. to 8 ft., and on the rises from 2 ft. to 4 ft. The tin sand is disseminated (though in larger quantity on the bottom) all through the drifts of red clay, sand, and surface soil. Wash was taken in my presence from all parts of the ground, from the grass roots to various depths, which yielded splendidly, though only roughly panned off in a shovel. The lease is well supplied with water and is admirably situated for working economically."

I am confident that, as an alluvial claim, it can hardly be surpassed. Mr. Carkeek and his son were at work ground sluicing in a small paddock on a rise. They had been at work 1½ day, and had then collected fully 1 cwt. of tin, which Mr. Carkeek will bring to town this week.

Of the tin-fields near the northern border we expect comprehensive reports from our representative who is accompanying the Mines Minister on his tour. The quantity of ore received at Newcastle last week from those fields last week from those fields was 38 tons 19 cwt. 2 qr. The quantity forwarded from Warwick and Stanthorpe for the month of February by the Southern and Western Railway, Queenstown, amounted to 188 tons.

Going further north the Herberton Advertiser reports that Mulligan's gully is turning out splendid streams; so is Spring Creek. At Emu Creek, Bonney, Greaves, and Watson's Empress of India lode is showing well; the tin running from peg to peg over the four chains. Smith and M'Loughlin's claim is also to be satisfied. At Herberton, the Maori Chief, originally M'Alister and Redmond's claim, now Redmond and Tierney's claim, two men's ground, struck the lode on the surface north-east of the Perseverance, and about 20 yards from off their boundary, carrying first-class ore for 15 ft. deep, whence a slight change occurred through a bluff in the lode, which they struck through and came on good first-class ore, which has continued to the present depth—35 ft. The Maori Chief is adjoining the celebrated Big Ben, Christmas, and other prominent claims. Black Diamond, two men's ground, working in cutting to the main shaft, reef 3 ft. wide, with another lode on the footwall; three lodes altogether containing good tin ore—say from 25 to 40 per cent. Perseverance, two men's ground, at present employed in tunnelling to cut the main lode which had been previously sunk to a depth of 35 ft., carrying fair ore. Just now there is too much water, hence the tunnelling operations, which will have the effect of completely draining the ground.

WHENCE SHALL WE OBTAIN MORE GOLD.—NO. IV.

SIR.—The principal auriferous districts of Brazil are in the Serra da Mantiquiera and the subsidiary ranges, spurs, and foothills connected with this great mountain system. The auriferous districts begin in the province of San Paulo in latitude 23° south, and stretch in a north-westerly direction until they reach latitude 21° 30', where they bifurcate, one line continuing northward through St. John del Rey and S. Luzia towards the line of the Rio das Velhas, the other line continuing north-west through Cattas Altas towards the line of the Rio Doce, the city of Ouro Preto lying in the middle of this fork. The gold is found in the quartz veins which crop out all over these districts and in the sands of the foothills, rolling-hills (morros), and river bottoms subsidiary thereto. The quartz veins were not worked by the early discoveries; indeed, little is heard of quartz mining in Brazil until it was taken up by the St. John del Rey Company, an English incorporation, about the year 1830. Up to that period gold mining in Brazil was confined to washing the sands, gravel, and killas of the morros and river bottoms. The centre and principal portion of all the auriferous districts lies within the province of Minas Geraes. In the personal examination which I made of this portion of the auriferous district during the year 1881, I travelled from Rio Janeiro by the Don Pedro II. Railway to Boa Vista, and thence by mules over the mountains to Campanha, a town that lies between the Serras das Aguas Virtuosas and the rivers Sapucay and Verde. From Campanha I made numerous excursions into the surrounding districts. In making this journey four ranges of mountains were crossed—first, the coast range, which is pierced by the railway; secondly, the Serra da Mantiquiera, between which and the coast range the railway continues; thirdly, the Serras das Aguas Virtuosas; and, fourthly, the Serra de S. Luiza, the two last-named ranges forming a portion of the Mantiquiera system.

The Central, Espinhaco, or Mantiquiera range is the most important in Brazil, and stands in the same relation to the South American Continent as the Alleghanies to the North. Its nucleus and culminating points are in the province of Minas Geraes. It extends from latitude 10° to 25° south, or from near the Rio San Francisco to the Cantareira range near the capital of San Paulo. It is the highest mountain range in Brazil, and the peak of the Itatiaia, which towers over the pass through which the road lay, is the loftiest in the country, its altitude being variously estimated at from 9730 ft. to 10,205 ft. above the level of the sea. After crossing the Mantiqueras, the road leads over several spurs connected with this range, then over a series of morros formed from the Mantiqueras, and then over other morros formed from the Serras das Aguas Virtuosas. The first distinct indications of gold were met with in these last-named morros. These signs grew more frequent as the Virtuosas were ascended. Upon the flanks of these mountains numerous quartz ledges were seen. The enclosing rocks are argillaceous and micaceous gneiss, granite, and grey slate, the quartz lying principally in the gneiss and slate. Beyond this range the road descends to a morros country, and in the midst of this lay the City of Campanha, with some 436 houses and 3500 inhabitants.

The morros of Minas Geraes lies at an altitude of about 3500 ft. above the sea, and consists chiefly of killas, which for the most part are as soft as the china-clay deposits of Cornwall; indeed, in some parts, are composed of similar material, and reminded me of the pits I had examined in the neighbourhood of St. Austell. The dominant colour of the killas is red, derived from the peroxide or hydrated oxide of iron in the mica. In some parts the killas is yellow, whilst more rarely streaks are encountered of pure kaolin. The red and yellow killas are impregnated with gold, derived from the quartz ledges which the micaceous gneiss and slate enclosed, before they were induced to the killas, that with earth and sand now compose the morros. From surface to bed-rock these morros are from 30 ft. to 200 ft. deep. The bed-rock is chiefly gneiss and slate, enclosing gold quartz ledges; all of these rocks being so much decomposed that they can be removed with the spade. Existing pits and cuttings demonstrate that this decomposition extends in many places from 10 to 15 ft. below the surface of the bed-rock. Further excavation might prove that it extends further. The gold is found in the greatest quantities in and about the decomposed quartz ledges (cintas), in the streaks of yellow killas, and in the gravel next to the bed-rock (cascalho). It is also found, though in lesser quantities, in the sands of the rivers which drain the morros country. The gold is generally very fine, and difficult to recover. Pockets are said to have been found here and there in the olden time, which are reputed to have been very rich, but stories of this character are common in all mining countries, and are not to be depended upon. The chief reliance of the miners must have been upon the low-grade pay-dirt and forced labour, got for nothing either by capturing the natives or importing men slaves from Africa.

The entire country, for many days' journey in every direction, is cut up with old mining quarries or catas, long since abandoned and overgrown with bush. Ruined villages and dilapidated houses near the catas attest the former activity of the mines. With the following exceptions, and, perhaps, some few others, no mining is being done at present. An English company is working some 1200 men, of whom 300 are unlawfully held in slavery at and near Morro Velho. A Brazilian company is sluicing gravel at Lagoa Dourada, north of the old town of St. John del Rey. An English company is making a test hydraulic operation on one of the affluents of the Rio Verde. In addition to these there are several broken down quartz companies, chiefly English, and here and there throughout the country some isolated negro is panning "flour gold" from the sands of rivers, and gaining thereby some miserable stipend—about 8d. a day.

The interior of Brazil is plentifully supplied with water-courses, but unless these are tapped in the mountains at considerable distances from the auriferous morros, and at great expense for ditches, flumes, siphons, pipes, &c., they cannot be utilised for working the morros by the hydraulic process. The water courses that flow through the morros country flow at the feet of the hills, and, therefore, cannot be used to wash the latter. There are, indeed, spots

here and there which are rich enough to "hydraulic," and to which water can be conveyed in ditches at a sufficient elevation above them to enable them to be "piped." But many of these have no "dump," or lower country, into which the debris can be washed. The remaining few places are hard to find and difficult to obtain. Moreover, it is yet to be proved by actual experiment whether the gold found in these morros will amalgamate readily.

The primitive mode of working was to conduct a small stream of water by ditches to the top of a morro, and then, after cutting this down at one place to the level of bed-rock, to allow the stream to fall over the face of the cliff thus formed. The bank was then broken away little by little, either by the spade or by digging a line of capstan-bar holes near the cliff and allowing them to fill with water until the bank gave way. The material was then concentrated by allowing the water to run through it either upon a series of steps or in a batidura. The steps were from 3 to 6 ft. long, from 3 ft. to 30 ft. wide, and from 6 to 12 in. deep. At the edge of each step was a piece of wood or cane to preserve the step itself from being worn away by water. The batidura was a series of trenches dug in the soft bed-rock, in shape like a gridiron, but each trench or bar of the gridiron a little lower than the next one, so that the water and mud would flow over them all in turn. After the auriferous earth was concentrated by these rude appliances it was carried by hand to the banks of an adjacent stream, or to a trough of water constructed for the purpose, and there panned out. The panning was done in the usual way, but in a wooden dish which varied from 18 to 30 in. in diameter, and from 3 to 5 in. deep in the centre. This ditch is called a batia or basin. Being made of hard wood, it is uncommonly heavy, and as I found upon trial very fatiguing to handle. Rockers, cradles, and toms do not appear to have been known to the antiquos, as the early miners are now called. In one place I heard that amalgamation with mercury had been tried, but to what extent, nor with what results, could not be ascertained. As the Government laid a very heavy tax upon mercury, and sluice-boxes were not in vogue, it is presumed that the amalgamation process was not generally practiced.

Notwithstanding these rude means, it appears from official sources that from about the year 1670, when gold mining first became a systematic pursuit in Brazil, to the beginning of the present century, when the production had fallen to an inconsiderable sum, there was produced in Brazil no less than 180,000,000L sterling worth of gold. This vast product proves that Brazil has been a great gold producing country, whilst my own investigations show that it still contains numerous auriferous quartz veins and killas, extending over a vast range of country. Notwithstanding these facts there is little reason to hope that Brazil, however rich certain mines or districts may prove, will ever again become a great gold-producing country. The reason for this is lack of water power above the level of the mines to be worked, and in the case of the gravel mines lack of dumping facilities. The water question is the key to all mining operations. It is her high level mountain lakes and streams that make California a great mining country; it is the absence of such advantages (except in favoured and isolated localities) that militates against Brazil.

ALEX. DEL MAR, M.E.

Cornhill, London, May 11.

NOBEL'S BLASTING GELATINE.

SIR.—In the *Mining Journal* of April 29 your correspondent "K." comments on Nobel's blasting gelatine in a way that plainly indicates his ignorance of that explosive. Instead of being only 10 to 12 per cent. more powerful than dynamite, blasting gelatine has been proved by well-known tests, to be at least 50 per cent. stronger; while, owing to the slowness and expansiveness of its action, it is much better adapted for certain classes of work than is dynamite, the effect of which, as all miners are aware, is very rapid and local. Blasting gelatine is thus destined to enter into active competition with dynamite, tonite, and the various kinds of blasting powders, than any of which gelatine, even at a comparatively high price, is much more economical. In short, the best indication of the success of the new explosive lies in the fact that the manufacturers—Nobel's Explosive Company, Glasgow—are said to have orders on hand for twenty times the quantity they can meanwhile produce, which, I suppose, must be 30 or 40 tons weekly, and their factories are being correspondingly enlarged. This extraordinary demand, it seems, has only recently set in, and is daily increasing.

When one recalls that Nobel's Explosive Company has only been in existence a few years, that the total cash capital subscribed by the shareholders was only 15,000L (see the *Mining Journal* for March, 1881, containing a report of their application to the Privy Council for an extension of the dynamite patent), and seeing that this capital, owing to the accumulated profits, and notwithstanding the payment of dividends equal to 50 per cent. on the original amount subscribed, has swelled into the enormous sum of 210,000L, besides a reserve fund of 120,000L; and that last year the net sum available for dividend was nearly 56,000L, equal to 23 per cent. on the present capital, or 230 per cent. on the original; all this seems to point to the company attaining even a greater degree of prosperity in the future than they have so unmistakeably achieved in the past.

Glasgow, May 9.

R. W.

THE TIN TRADE.

SIR.—Although the figures of the past cannot be safely taken as forming any reliable guide for the future of prices, the undoubted particulars may be of interest for those who care to consider how quantities have ranged with values in former years. I say cannot be safely taken because when the quantities produced and the quantities consumed are so constantly and so sharply changing, the same circumstances do not return to produce the same events. For instance, when as at present production is largely expanding, and excessive supplies are almost daily arriving for the purposes of a consumption which has largely decreased, it would be fallacious to suppose that the same quantities of tin can now be worth the same money as they were at a period when these conditions were reversed.

However when fine foreign tin is going into stock at the rate of 800 tons per month we do not need any guide, for the result is inevitable—that story goes without telling, as they say in France—but it is nevertheless curious to observe how our English markets were unmolested by foreign Syndicates the same quantities of tin as now exist were very differently valued by our more experienced London dealers, who did not consider it to be either necessary or honourable to support their market by the concealment of stocks:

Dutch and English Stocks in	Tons.	Value.
May 1, 1877	15,374	£70
May 1, 1878	16,704	£60
May 1, 1879	19,409	£68
May 1, 1880	14,779	£82
May 1, 1881	16,781	£87
May 1, 1882	16,740	£96

Neath, May 10.

CYMRU.

TIN BOUNDS.

SIR.—A gentleman of the medical profession, who called on me this morning, is the owner of tin bounds situate in the parishes of Gwenap, Redruth, &c. Under the Stannary Laws nearly all those bounds are valueless, because no workings have been carried on in them for some years; and a tin bound unwrought during a period of twelve months becomes extinct. I do not know of any tin bounds which for that reason are not extinct. The last tin bound which became so is one at Poldice Mine, which belonged to the Duke of Leeds, and some others, and which for many years paid the owners large dues. The boundowners received 6-13ths, and the landowners 7-13ths of the entire dues rendered by the lessees of the mines. Tin bounds were to be recognised over a large portion of Cornwall called "the corners" thereof, which were renewed on a certain day annually by putting a fresh turf or earth on the top of the little hillock by the pit. This act was supposed to maintain a right to work within the limits, or to grant to others a right to work. That supposition was an error entertained by both landowner and boundowner for a long time, but at present the landowners will admit of no such right except where the continuous working can be proved. The consequence

is that nearly all the tin bounds in Cornwall and Devon have ceased to be a property.

The gentleman mentioned above was complaining of the loss which he and others who owned bounds which were purchased, in some cases, at great cost, have sustained by their extinction. The late Messrs. Williams, of Scorrier, possessed many scores of these bounds in Gwenap, St. Agnes, Redruth, and other parishes, the surveying of which, in 1827, occupied me some months, and a gentleman called Capt. Towar before me. I suppose they were purchased in ignorance of the legal condition under which they could be held.

The creation of tin bounds was, I believe, consequent on the objection which the owner of the land had to have his property defaced by mining operations. In such cases the Vice-Warden had power to enter the land, and mark out for the tanners limits within which they should work, despite the will of the landowner, but who, nevertheless, had his dues. As a rule, landowners in the present day know in general too well the value of the metals to refuse to grant the power to work for them. I knew, however, one stubborn man who said that he would not grant so long as he lived, and said, "So help me, G—."

I do not know whether the Vice-Warden's power to cut tin bounds has been taken from him. If not, I know of a place where he may be called to exercise it.—Truro, May 10.

R. SYMONS.

CROWN ROYALTIES.

SIR.—In last week's Journal your North Wales Correspondent refers to the onerous terms exacted by the Crown for working its mines. I have no knowledge of Welsh mining, but have been for years connected with the chief industry at Festiniog, and can quite endorse your correspondent's remarks by the manner in which official action affects some of the slate quarries there. In this district all the quarries belonging to the Crown except one are now closed. The only survivor, after 40 years of work and the expenditure of about £150,000L, is just beginning to meet expenses. Yet the average dues charged are nearly twice those of other and successful quarries in the neighbourhood owned by private landlords! Comment is needless. One can only hope that the new appointment at the Office of Woods will result in a reversal of what I cannot call other than this blind policy.

TUBOG.

DISCOVERY OF COAL IN WESTMORELAND.

SIR.—In the notice of the discovery of coal in Westmoreland inserted in the *Mining Journal* for April 22, the aggregate tonnage available is stated at 300,000 tons. Will you allow me to correct that statement, and to inform your readers that the actual available tonnage has been estimated by competent authorities at something over three million. J. G. GOODCHILD, H. M. Geol. Survey.

Jermyn-street, May 5.

DEEP ADIT DRIVAGE, &c.

SIR.—I was pleased to see your North Wales Correspondent's remarks on the Coed Mawr Pool Company's work in carrying on their deep level by rock-drills, and the benefit which a continuation would confer upon the adjoining properties. It is a well-known fact that this level is approaching rich and continuous ore deposits, which have yielded upwards of 100,000L worth of lead ore from a depth of only 30 fms., and from a very limited area. It is also equally well known that beyond this property, and in the very heart of the mountain, the Wheal George, East Wheal George, and other mines contain several equally productive veins, but the want of good roads, tramways, and deep adits has rendered their development slow and expensive, and consequently often disappointing to those interested. The consideration of this important matter has occupied my attention for several years, and I am pleased to say not without taking form. The proprietors of the Wheal George and East Wheal George have for the past six months been negotiating to run a tunnel through as your Correspondent suggests, and not only to ran it through the mountain for draining and working the minerals but also to connect it with a surface tramway to the London and North-Western Railway at a suitable point, thereby securing cheap transit and cheap and effective means of working the various lodes to depths of from 60 to 140 fms. by adit drivages, which, aided by rock-drills and the coming new motive electric power, cannot fail to place this district in the van of lead mining in the Principality. I hope to refer to this matter again soon.

CHAS. KNEBONE.

BEDFORD UNITED MINES.

SIR.—Since the insertion in the Journal of recent reports made by me on this mine I have been asked by many for further information; I will, therefore, observe that the development of the lode is very rapid on account of the easy nature of the ground, and the progress is marked by improvements in all the points of operation.

The present prospects encourage the belief that the greatest discovery of the district is being made since the opening up of the Devon Great Consols main lode. The course of ore now being laid open is a great and rich one, and great returns will soon be available. It should be known that this lode has a length of 900 or more fathoms through a splendid channel of ground for the whole of the distance, and the greatest of expectations were expressed regarding it long before actual operations on it took place. Bedford United is situated close to the Crebors, which mines are now receiving a good deal of attention; and I was informed yesterday by the manager of Wheal Crebors that a cross-cut is being put out from that mine to intersect this lode at a point over 100 fms. to the east of the boundary of Bedford, and further, to show the great value placed upon this lode, I would mention that at its extreme western boundary (which is the River Tamar) the indications are such that the Old Gunnislake Mining Company have been led to carry out extensive works in order to intersect it in that mine. My advice to all investors here is to come and see for themselves, and they will be delighted with the splendid piles of rich ores brought to surface from the new discovery, which already shows a great course of ore for nearly 30 fathoms in length, and is in the present end of the 30 fm. level east still as rich and promising as ever.

WILLIAM PHILLIPS.

THE UPPER SEVERN MINING DISTRICT.

SIR.—Having seen Mr. B. P. Hancock's letter in the Journal referring to this district, which means, I presume, the north-western corner following the River Severn from Llanidloes to its rise in Plynielmon mountain

another trial may be to some extent justifiable. Then, again, there is the Geifron, which, although much has been expended upon it without much result, is said to be an excellent mine. It has only been worked between the adit and surface, and some hundred tons of copper were sent away. There are also other promising places known to the miners of the district. There can be no doubt that following the River Severn west from the market town of Llanidloes, we pass some of the finest mineral veins in the kingdom, on the way to Plynlimmon Mountain. This is a district upon which much more could be written, but the above will suffice to show that with skill and energy it is not unworthy the attention of capitalists. D. P.

Llanidloes, May 4.

TIN MINING IN ST. BLAZHEY DISTRICT.

SIR.—I have been informed by good authority that the lode in New Fowey Consols is worth 50/- per fathom. I have not seen the lode underground, but from what I have seen at surface I have not the slightest reason to doubt the statement. It is expected that the engine for pumping and stamping will work in about six or eight weeks from this date.—May 10. J. H.

WHEAL UNY, AND ITS MANAGEMENT.

SIR.—The last report from this mine must be very satisfactory reading to the shareholders, Hind's engine-shaft having greatly improved in depth, showing good stones of tin. The levels are also much better. It is to be hoped that, as soon as possible after Hind's shaft is sunk to the required depth and levels laid off, the sinking will be continued by machinery, as it is evident that the mine is improving as depth is attained, as is usual in this rich district. S.

HUNTINGTON COPPER AND SULPHUR COMPANY.

SIR.—As a shareholder in this undertaking I shall be glad if you will find space for a few observations which may be of general interest. The Chairman of the company on March 21 issued a circular to the shareholders in which he stated that the directors were anxious to know the candid opinion of Captain Nance, who was recently appointed manager, as to the actual state of the mines, machinery, plant, &c., as he found them, and whether a sufficient out-put of copper could be relied upon, on which the future prosperity of the company so much depended. And by way of conveying to the shareholders Captain Nance's candid opinion he goes on to state that Captain Nance has, greatly to the satisfaction of the directors, formed the most favourable opinion, and has expressed his views in a detailed report of a very interesting and encouraging kind, and that they are only sorry from the great length of the report that it cannot be given *in extenso* to the shareholders.

Being a shareholder, and considering the depressed market value of the shares of the company and that they are so seldom quoted on the Exchange, I, like many others, placed very little value on such vaguely expressed information extracted from a report of great length and of a very interesting and encouraging kind, and in order to form an opinion as to the value of this property I have at considerable inconvenience perused Captain Nance's report, and had the Chairman embodied in his circular that part of it wherein he estimates the cost to put the mines, machinery, plant, &c., into thorough working order at about 1000/-, and with that small outlay (which has been sanctioned by the directors), the mines, &c., would be by the end of April in a position to produce 40 tons of copper per month, yielding a clear net profit of 1200/- or more per month, and that the property of the company extends to upwards of six miles, with one and a third mile of mining rights, it would have given stability to the company and confidence to shareholders (who may not have an opportunity to inspect the report) to hold by their property, and not dispose of it at its present depressed value. I would suggest that the directors, now that the mines, &c., would be in complete working order by the end of April (which they seemingly have never been in before), should give a weekly or fortnightly report, as many other companies do, of the workings of the mines, what their output is, its value, the expenses connected therewith, further discoveries, and prospective results.

G. A. S.

Glasgow, May 8.

MARBELLA IRON ORE COMPANY.

SIR.—It is now about 12 months since I first drew attention to this company, and in the interim the directors have wiped out a debit balance, declared a dividend at the rate of 5 per cent. per annum (10/- per share), and carried a fairly large sum to a reserve fund. They now are issuing the reports half-yearly, which was the wish of some of the larger shareholders. Having disposed of the output of ore for some considerable time to come at very remunerative prices, a good dividend will be forthcoming in July next. I believe the dividend for this year will be from 8 to 10 per cent., and without being over sanguine, I think 3 or 4 per cent interim dividend will be declared next July. The shares have now got a quotation on the London Stock Exchange, and there is no company with better prospects.—Longsite, Manchester, May 11. J. D.

THE NEW MINERAL DISTRICT IN NORTH WALES.

SIR.—I noticed the remarks of "T. L. E." in last Saturday's Journal, and I think they are timely and worth consideration. I have had occasion to visit the Pessor Valley and surroundings professionally twice during the past few months. There are at least a score of regular and well-defined lodes between Trawsfynydd and Trewherny Lake, from which I have broken rich rocks of copper and lead ores and pyrites. I have also examined two or more outcrops of auriferous quartz of very prepossessing appearance. The facilities are all that can be desired. The Great Western Railway comes right along the side of the valley, with a mineral station in the centre. The River Pessor affords an abundant water supply, and the lodes cross the valley obliquely, admitting of adit level drivages on both sides; while the village of Trawsfynydd affords abundant and cheap labour. Capitalists need not go abroad for investments with such splendid opportunities at their doors.

CHAS. KNEEBONE.

Bettws-y-Ceed, May 11.

VICTORINE MINING COMPANY.

SIR.—Can any of your numerous readers inform me why the first drawing of the 10 per cent. first mortgage bonds in this company has not taken place? According to the prospectus, the first drawing should have been on May 1. Has any report of the mill been received? If so, what are the results? And has the Mear's process of chlorination turned out a success? Is it true that there has been great mismanagement, and that the funds of the company are nearly exhausted? It would be interesting to know what has become of the working capital.

W. B. D.

Victoria Park-road, E., May 11.

THE GREAT DIAMONDS OF THE WORLD.—Since the discovery of diamonds in South Africa the supply has been so largely increased that interest is felt in them by every member of the community, so that the handsome and interesting volume (London : Geo. Bell and Sons, York-street, Covent Garden) just completed by Mr. EDWIN W. STREETER, F.R.G.S., will without doubt be very widely circulated. The celebrated diamonds are now so numerous that some exhaustive and systematic description of them had become a necessity alike to buyers and possessors, and the mere enumeration of the diamonds referred to will suffice to show the character and completeness of the book. First comes the Braganza, the great Portuguese diamond, or more probably topaz; then comes the Matan, the Nizam, the Steward, the Great Mogul, the Star of the South, Du Toit I., the Great Table, the Regent of Portugal, the Jagersfontein, the Orloff, the Koh-i-Noor, the Darya-i-Noor, the Ahmedabad, the Port-Rhodes, the Turkey I. and II., the Taj-i-Mah, the Austrian Yellow, the Pitt or Regent, the Mountain of Splendour, the Abbas Mirza, Du Toit II., the Moon of the Mountains, the Patrocino, and about 50 others. Each account is clear and concise but the author

has been careful to give all details likely to prove of interest to his readers, and at the same time the accuracy of the information may be relied upon since the manuscript of the chapter on the Koh-i-Noor has been graciously read and approved by Her Majesty the Queen. The accounts of the Pitt and the Eugénie diamonds have been revised by the Empress Eugénie; and equal care seems to have been taken with regard to every other diamond reported upon. The amount of research necessary to produce a work of this kind must have been enormous, and Mr. Streeter may certainly be congratulated upon the result of his efforts.

REPORT FROM CORNWALL.

May 11.—Though there has been further depression in the tin market since the date of our last report our opinion of the general soundness and satisfactory prospects of mining enterprise in this district remain unshaken. Nowhere in mining itself can we see any reason to come to a different conclusion, and everyone knows that merely market complications, however severely they may be felt for the time, cannot last for ever. Of course now some untoward influence will be credited to the calamitous news from Ireland. Under present conditions almost any matter of public moment can be made to have its effect, and to play into the hands of "bulls" on the one side, or, what is more likely just at present, of "bears" on the other. Attempts at definite prediction seem perfectly futile, and as likely to deceive those who make them as anyone else. To holders of good shares we can only repeat the advice we have already given—do not be tempted to sell.

Mr. Basset seems to us to have acted wisely alike in consenting to a division of West Seton shares, and in restricting the extent to which that division is to go. This is one of the ways in which the action of a lord of a mine may be beneficial. One of the features which has done more to discredit the working of the Limited Liability principle in mining than anything else is the inordinate multiplication of shares. Where personal responsibility is so small as to be practically non-existent there is always a tendency to reckless dealing, and to let directors and managers take pretty well their own way. When in addition to that the market can any time be flooded with a number of shares of small value, there is really more scope given to the action of speculators than to the promoters of legitimate business. No one has any right to go into any speculative undertaking who cannot at least risk a 10/- note into one concern, and if no mine shares were ever issued at a lower nominal value we believe that Limited Liability would begin to look up in mining matters as it certainly never has yet. People who mean business do not deal in single 1/- shares, and if they are to be dealt with in sets what real gain is there in calling what is practically one or two ten or twenty? A significant commentary upon these remarks is supplied by the experience of a mine which is only in 5000 shares—after all not an excessive figure for any concern that is really worked on an extensive scale, for we must remember that it takes ten or twenty years' capital to work a good mine now than it did a generation or two ago. We allude to Frank Mills, recently wound-up with a call of 40/- a share. Of the 5000 shares in that mine only 300 were capable of being traced home and made responsible. How can mining enterprise be made responsible for such a state of things as that?

We pointed out last week, as on several recent occasions, the enormous gain which mining has derived within the past ten or a dozen years, more especially from the improvement of mining operations, emphasising our remarks by a reference to the experience of Dolcoath. It seems to us that the time cannot be far distant when some of the chemical processes of extracting the metals from their ores will be profitably introduced. The feasibility has long been proved, but they have never yet had a fair chance, owing mainly to financial complications of testing their utility in the general routine of mining practice—at least, so far as Cornwall and Devon are concerned. Elsewhere they answer well enough. It appears now as if the mechanical processes of ore dressing have well nigh reached their limits of improvement; and if so there is all the more necessity that they should be supplemented, not superseded, in the manner indicated. The time does not seem unfavourable for trying the experiment on a satisfactory scale.

TRADE IN SOUTH WALES.

May 11.—The South Wales coal shipments for April show that Cardiff has sent away 487,483 tons foreign and 70,799 tons coastwise, being the largest amount on record in any one month in the history of the port. Newport has sent away 102,611 tons foreign and 66,444 tons coastwise; Swansea, 73,472 tons foreign and 64,082 tons coastwise; Llanelli, 9129 tons foreign and 8982 tons coastwise. Cardiff has shipped 16,621 tons in the month more than Newcastle, which stood at 344,970 tons foreign and 196,691 tons coastwise. The shipments from Cardiff last week were 118,722 tons foreign and 13,025 tons coastwise; Newport, 30,892 tons foreign and 17,280 tons coastwise; Swansea, 21,687 tons foreign and 6117 tons coastwise. The amount of trade is thus very large, but prices remain low, ranging from 9s. 6d. to 12s. per ton, according to quality. Inferior sorts may be quoted as low as 7s. 6d.

The shipments of iron amounted to 9806 tons at Cardiff in the month of April; Newport, 15,168 tons; Swansea, 1406 tons. Only small quantities were sent away last week. The Cyfarthfa Works Bill is now before the House of Commons, and has passed the standing order, so that we may positively look forward to an early resumption of work there. The other works are very quiet, and the necessity of competing with continental houses keeps prices very low. The amount of ore received in Cardiff last week was only 3108 tons, but stocks are plentiful, and prices may be quoted at 16s. per ton, with a weak market.

Another firm has succumbed to the depression of trade in the tin-plate industry, that of Messrs. Jenkins and Lewis, of Aberavon. It is thought by some that all the small masters will go to the wall on the present crisis. Coke-mades are only fetching 14s. 9d. per box at Liverpool, and speculators are buying from hand to mouth in order to complete positive orders.

Certainly the most important matter connected with the district which has recently occurred is the visit of the Royal Commission upon Accidents in Mines to Llwynypia. The commission consists of Prof. Warington Smyth, M.A., F.R.S. (Chairman); Earl Crawford and Balcarres, F.R.S.; Sir George Elliot, Bart., M.P.; Prof. Abel, C.B., F.R.S.; Mr. Thomas Burt, M.P.; Prof. Clifton, F.R.S.; Mr. W. T. Lewis, M.E., and President of the Mining Association of Great Britain; Professor Tyndall, F.R.S.; and Mr. Lindsay Wood. The secretary is Mr. Arthur Williams, Barrister-at-Law. The experiments at Llwynypia were commenced at the end of last year, and were conducted for the purpose of testing the utility and safety of existing lamps by means of apparatus which forced the natural gas from the blower at Llwynypia into a gallery. The experiments had to be deferred in order that the gasometer power might be doubled. This has now been done, thanks to the efforts and enterprise of the Glamorgan Coal Company, more especially Mr. Hood, jun., and Mr. Lax, whose labours in giving effect to the wishes of the commission have been valuable and ungrudging. Preparations of gas and air are adjusted carefully, and the safety-lamp is introduced to the gallery. The mixture of gas and air has then to pass through various velocities. The result, so far, seems to indicate that there is such a difference in the nature of the gas given off naturally at various blowers as to have fully justified the action of the commissioners in prolonging these experiments. Prominent, too, it should not be forgotten, amongst the subjects dealt with by the commissioners is the effect of coal dust upon explosions, and as to whether explosions are possible where coal dust exists in air which has no admixture of inflammable gas.

During the present visit of the commissioners to Llwynypia, it is probable that a process for getting coal by means of caustic lime cartridge will be shown to the commissioners by the patentees. If such a process should prove successful it will have a vital bearing upon the use of powder in mines. At Llwynypia the safety of safety-lamps is being closely investigated by the Commissioners, who have nearly 150 lamps, which have already been subjected to a series of experiments, and these have tended to show that the lamp which is perfectly safe in an explosive mixture moving at the rate of 4 ft. a second will explode when the current of air is increased. Of inestimable importance in this explosive mineral district is this phase of their complex and comprehensive investigations—namely, the ascertaining what lamp will best stand strong and a rapid current of explosive air. It is conceivable that a lamp may be perfectly safe in a strong current, and yet not afford the other indispensable practical conditions of light and handiness. Its construction may be so awkward that it will be comparatively useless in application. The Royal Commissioners who will be present at next week's investigations will be the Chairman, Prof. Abel, Prof. Clifton, Prof. Tyndall, and Mr. Lindsay Wood. They will, it is anticipated, complete their investigations by the end of the week. Mr. Galloway, the propounder of the remarkable coal dust theory, will be present by invitation. The painstaking care which Mr. Arthur Williams has bestowed upon the important duties which he has to discharge meet with the fullest appreciation on the part of the commissioners. Mr. Smethurst, of Garswood Hall Colliery, has also arrived, and will assist the Commissioners. An important fact is said to have been discovered—that the South Wales gas is less combustible than the gas of the Lancaster coal field. It is expected that the Commission will visit the Risca Colliery, upon the completion of their experiments at Llwynypia. Such a visit cannot fail to be of interest, as several of the latest scientific improvements have been introduced with a view to further promoting the safety of underground working.

A terrible accident happened on Tuesday at the Crown Level Workings, Treorcy, Rhondda Valley, by which Mr. S. W. Kelly, the proprietor, and his overman, Harris, have placed their lives in jeopardy. They imprudently went into an abandoned working with naked light, and an explosion immediately took place, blowing them to some distance, and injuring them to such an extent that they may forfeit their lives by their folly. There were fortunately only three other men in the workings at the time, who were not at all injured.

The preamble of the Bute Dock Bill has been proved before committee of the House of Lords. The opposition on the part of the freighters, railway companies, and pilots was very severe, but their cause was much weakened by certain concessions made at the last moment. The profits of the docks during the last 27 years have only been 3½ per cent., but the value of Lord Bute's land in the vicinity of the docks has been increased to a fabulous extent. The present lord and his father have spent 2½ millions of money on the docks, and it is proposed to spend another 500,000/- on the Roath Dock, for which powers are now being asked to enable the work to proceed.

The local Correspondent of the South Wales Daily News writes—The commissioners inspected with much interest Kirkhouse and Lewis's patent automatic tank, for laying the dust in mines and other places, also for distributing disinfectants when required. It had been fixed for their convenience close to the *locale* of the experiments. It consists of a cylindrical tank having a capacity of 220 gallons, carried upon four ordinary tram wheels, which are keyed fast on their axles. The leading axle has a crank in it, close to the axle-bearing on one side, so that the crank would work clear of any sheaves or rollers which might be in the centre of the tramway. This crank, by means of a connecting-rod, works a double-acting pump at the after-end of and below the tank, the said pump being also close to one side of the apparatus, so as to be out of way of road rollers, &c. In order to secure the adhesion of both pairs of wheels for driving the pump, the two axles are coupled together by means of a pitch-chain and sheaves when necessary. The water drawn from the tank by the above-mentioned pump is forced into an upright air-vessel placed at one end of the tank, and on the top of this air-vessel in a three-way cock, by means of which the water pumped can be directed either into a wrought-iron pipe, curved in horseshoe form and pierced with a row of small holes along the outer edge of the horseshoe, so that the jets of water issue upwards towards the roof, and on each hand sideways, in a plane transverse to the roadway, thus spreading a sheet of spray across the whole area of the air-current; or else it can be turned into two straight horizontal pipes running longitudinally one on either side of the tank and pierced each with a row of holes, so that the jets issue at an upward angle right and left of the tank in two lines parallel with the roadway. If required, the same three-way cock puts both systems of jets in action at the same time, or it can be placed so as to stop the discharge of spray altogether; in the latter case the water pumped lifts a special relief valve and returns into the tank again.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

May 11.—The business doing in the lead mines in Derbyshire has not changed much of late, the work going on steadily, but there has not been any increase in the output, for no one appears desirous of opening out any of the many mines that have been abandoned, although there is no reason why the majority of them might not be made to pay. But as has been so often pointed out in these reports, lead mining in Derbyshire has not been made so attractive to capitalists as other districts where many companies have founded.

The collieries have not been working so well of late, most of them not doing more than about four days a week. Business in house coal with the Metropolis has been more than usually quiet, which the colliery proprietors consider to be due to some extent at least, to the high charge for carriage by railway, as compared with what the coal is taken by sea. It has been proposed to adopt a dual system, carrying the coal partly by rail and partly by sea, and Boston has been pointed out as being singularly well adapted for the purpose. But for some reason or other the scheme has received little or no encouragement. The Great Northern, which is now connected with the Derbyshire coal fields, has laid out a good deal of money at Sutton Bridge, and made a dock for the purpose of shipping coal, but that place is 20 miles further off from Nottingham than Boston, so that Sutton is not likely to attain the distinction that the Great Northern has been endeavouring to give it. But a port is necessary for the purpose of exporting the hard or steam coal, which cannot be sold inland, and cannot well be sent to the Thames. The question of the railway rate is, however, a most important one, and no single company is likely to make a reduction without consulting others who are interested in the coal traffic, especially to the Metropolis. As it is, it appears that the Midland Railway Company, which takes the principal part of its coal traffic to London from Derbyshire and Notts, carried 30,900 tons less there in April than in February, which would be equal to a decrease in the revenue of something like 9000/-, a rather serious item certainly. But then the rate from Newcastle to London by sea is not more than 4s. per ton, whilst it is 6s. 2d. per ton from Derbyshire, although the distance is only about half of what it is from the former. In the iron trade the business doing in pig has been of a steady character, the make being still large at Staveley and other places, a good deal being sent into Lancashire and Staffordshire, whilst a large quantity is used at the foundries connected with the furnaces. In finished iron there has been a fair output, but by no means equal to the productive power. Steel rails have in no way declined, and there appears to be as much as ever doing in them at the extensive works at Dronfield.

In Sheffield the leading works continue busy, and this is more especially the case as regards the steel-faced armour-plates, in which both Brown's and Cammell's have as much as they can do, and heavy orders are being received from several Continental Governments, so that this branch looks most promising. The mills engaged on other materials, including sheets, ordinary ship and boiler plates, hoops, bars, and wire are all kept fully going. This is now the active season for sheep shears, and makers are more than usually busy for our colonies as well as for South America. Bessemer rails are in good demand, but makers are placed at a great disadvantage in taking foreign contracts owing to the railway charges to a port for shipment, and this is likely to lead to some important changes that must affect Sheffield, and that materially, although it may be looked upon as the birth-place of the Bessemer process. In crucible steel an increasing business is being done, the requirements of cutlery and wheel manufacturers becoming heavier than they were. For the

best descriptions of table, pocket, pruning, and similar knives there is a fair demand, and file and saw makers are now fully employed. Some of the foundries are now much better than they were in the earlier part of the year as regards both heavy and light castings, among the specialties making headway being crushers, pulverisers, and coal washing and grinding machinery; whilst in higher material there was a fair output of palisadings, pipes, stoves, cooking-ranges and grates.

The coal trade of South Yorkshire is still quiet, the demand for household qualities being but moderate, and whilst steam sorts are being more inquired for, the raising of them necessitates the stocking of the former, for the hard and soft coal are part and parcel of the same seam.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

May 11.—The coal trade is without new features of note this week. The demand upon Cannock Chase is mostly for forge and steam sorts, since the domestic coal trade is marked by the sluggishness usual as summer advances. The colliers employed there are making on an average about four days a week. Best deep house coal is still quoted 7s. 6d. to 9s., and shallow at 7s. to 8s. 6d., for no official reduction has yet been announced by the owners. But as to best deep sorts buyers are still trying to secure supplies at 6d. under the quoted rates. Gas coke is badly wanted by the ironmasters, for stocks are cleared out, and supplies are difficult to get. They fear lest they may have to satisfy themselves with hard coke. Ironstone sold only slowly on Change in Birmingham this afternoon. Indeed, quite tempting offers by vendors met with only a cold response. Ball ore raised in South Wales was quoted at 12s. 6d. per ton delivered, and Runcorn (Lancashire) purple ore was priced at 20s. per ton delivered. The pig trade showed rather more movement in a few foreign brands, but the improvement was not conspicuous. Derbyshire sorts were still quoted 47s. 6d. to 50s., though occasionally as low as 45s. was accepted for small lots. Hematites of Welsh and West Coast makes were dull at 67s. 6d. per ton. Finished iron was without change at 77. 10s. to 77. 5s. for bars, and 77. for hoops. Tin-plates quiet.

The South Staffordshire Colliery proprietors have manifested great interest this week in the sitting of the select committee of the House of Lords to consider the new Bill of the Mines Drainage Commissioners, whereby it is sought to increase by 3d. per ton the rates which the Commissioners can levy upon slack and coal, making the maximum rate 9d. instead of 6d. as now. The bill was chiefly opposed by Mr. Fisher Smith, the agent of the Earl of Dudley, and by the Patent Shaft and Axletree Company, of Wednesbury. These urged that the proposal would have the effect of closing the smaller mines of the district, since these would be unable to bear the increased rates. The promoters, however, contend that such would not be the result; but rather that the bill would give to mines which are now drowned out a much greater probability of reopening than they have at present, since the Commissioners would be in a better position to drain such mines. The Commissioners state that they are only desirous of carrying out the duties given to them by the Act of 1873, and that an additional rate of 3d. is necessary to prevent the Commission from collapsing. At the close of the enquiry the committee intimated that the preamble was proved; and the Bill now awaits the third reading in the Lords.

In the china and earthenware trades of the potteries the demand for the highest class of goods for America has lately been brisk, and continental business is better.

NORTH STAFFORDSHIRE MINING INSTITUTE.—A meeting of members was held on Monday at Stoke-on-Trent, Mr. J. Lucas presided. A paper on "The re-opening of the Burley Pit, Apdale, after the explosion in March, 1878," was read by Mr. J. Strick. The writer of the paper showed the dangers and difficulties of such an undertaking, and the way in which in this case they were dealt with and finally overcome. A vote of thanks was accorded to Mr. Strick, and the paper was ordered to be printed.

TRADE OF THE TYNE AND WEAR.

May 10.—The Steam Coal Trade in Northumberland continues brisk, most of the collieries being well supplied with orders, and there has been a fair amount of chartering done lately both on sailing and steam tonnage, and freights have advanced to some extent. At the Amble port the Broomhill and Radcliffe Companies are improving their shipping places, with a view to loading all their produce there instead of sending a part to the Tyne for shipments. The Durham coke trade continues strong, and the make of this article in South Durham is now very large, amounting to about half a million tons per month; fair prices are also received for coke at present. The house coal trade in Durham continues flat, and the manufacturing coal trade has been affected considerably by the strike of the iron workers, but it is hoped that the strike will be ended shortly. The shipment of coal and coke has, however, been very large, both foreign and coastwise, at the docks on the Wear during the past week, and they have also been considerable on the Tyne. The Tyne continues to hold the proud position it has hitherto occupied as the leading coal port, Cardiff occupying the second place, as will be seen from the figures giving the exports from both ports. In January:—Coal and coke, Cardiff foreign, 493,146 tons; coastwise, 78,846 tons; total, 571,992 tons. Tyne, coal and coke foreign, 342,242 tons; coastwise, 306,954 tons; total, 649,196 tons. Excess of the Tyne over Cardiff, 77,204 tons. It must also be noticed that the late improvements in the harbours at Blyth and Amble have attracted a considerable quantity of steam coal from the Tyne during the past year.

In connection with the explosion at West Stanley the resumption of the adjourned inquest on the bodies of the men killed was fixed for Wednesday. It is now intended to further adjourn the enquiry until May 26, in order that Mr. Morley, M.P., barrister, who has been instructed by the Home Office to attend this and the enquiry at Tadhoe, may be able to attend both in one week. Mr. Edge, barrister, has been instructed to attend on behalf of the owners; and Mr. Bray, solicitor, Sunderland, will watch the enquiry in the interest of the Miners' Union.

The strike at the Ushaw Moor Colliery still continues, the bulk of the men formerly employed remaining near the works, many of them being lodged in a tent, and the women and children lodged in the Catholic school-house. The colliery is partially worked by new hands, but those hands produce very little coal, and the owner has incurred much expense in bringing them to the spot. The strike has now continued many months, and it has proved most disastrous to both parties. The men are mainly supported from the funds of the Durham Miners' Association, but as the owner of the colliery is not a member of the Owners' Association a heavy expense has been incurred by him. A strike has also occurred at the Preston Colliery, belonging to the Consett Iron Company, owing to a dispute between the miners and the bank agent. The miners requested the owners to dismiss this man, and the strange request not being complied with they have resorted to a strike. It appears, therefore, that sliding scales, arbitration, &c., are powerless to prevent strikes in the coal and iron trades. The ironworkers' strike still continues; some men are indeed at work, but generally the men are still out. At Consett it was expected that work would have been resumed on Monday, but the men failed to start, and the furnaces are now damped down, and the masters have decided that work shall not be resumed during the present week. This is truly lamentable, as the men are not only resisting the award of the arbitrators but are acting in direct opposition to the rules of the Ironworkers' Association, of which they are members. An adjourned district delegate meeting was held on Monday, at Sunderland, which was attended by representatives from the Tyne, Wear, and Tees. It was resolved at this meeting that a ballot should be taken at all the works in the district to settle the question as to going to work under protest. The latest accounts state that generally the men at the various centres are averse to the strike; it is, therefore, concluded that many of the men who are out are non-union men. It is evident that the men are to a considerable extent disorganized, and those who are members of

the Association do not adhere to the rules of the society or attend to the advice of their leaders. In this respect there is a marked contrast between the miners and the ironworkers in general.

The recent action of the men in coming out in direct defiance of the Board of Arbitration and the award of Mr. Pease has had the effect of inducing the ironmasters of this district to form an association for mutual protection. Several meetings have been held at Middlesborough, and rules have been drawn up. One leading feature of the association will be a large guarantee fund. The object of the association will be to back up the resolutions of the Arbitration Board. They will, in fact, have an association which will answer, on their side, the same purpose as the Ironworkers' Association on the other. They will not, however, use this association, which will be a most powerful one, for any other purpose than to maintain the decision of the Arbitration Board, and compensate firms who may suffer from the irregular action of the men.

The pig iron market at Middlesborough has been very quiet, indeed dull this week. The principal topic has been the ironworkers' strike, which has disorganized matters to a considerable extent, both in the coal and iron trades. At Middlesborough on Tuesday the tone of the market was rather flat, though prices were moderately firm. Business was limited, and comparatively only a small quantity of iron changed hands. Makers keep the prices at 43s. 3d. for No. 3. If the strike continues a certain number of furnaces will be damped down. The manufactured iron trade is much thrown out of joint by the strike. There is no change in the rates of manufactured iron. On Wednesday I learned that the ironworkers at Jarrow, Gateshead, and some other localities have agreed to go on, so that the partial settlement of this ill-advised strike may now be considered as certain, and, on the whole, it appears to be probable that the strike will soon be at an end. Improvements continue to be adopted in the iron manufactured at Jarrow blast furnaces the Whitewell patent hot air stoves are being substituted for the old style of flues in connection with the blast furnace, by which it is expected the temperature of the air will be raised from 1100° to over 1500°. The foundation of three of the flues are completed, and a fourth is in course of construction, and two more will follow in due course. In connection with those new flues a high chimney is being built at the east end of the blast furnaces. The concrete foundation of the chimney measures 32 ft. in diameter, and the brick work at the base commences with a diameter of 23 ft. The height of the structure will be 180 ft. It will be the largest chimney in the district, and will absorb over 380,000 bricks. Already, in connection with the remodelling of the blast furnaces new fitting and smiths' shops have been erected. In time it is proposed to considerably enlarge the forge shop in connection with the engine works.

The valuable Rosedale mineral estate has been sold to Mr. Wm. Milburn, of Newcastle. The property contains extensive beds of iron ore and other minerals, which are well known in connection with the late Rosedale and Ferryhill Iron Company, under whose directions most elaborate arrangements were made for working the ore. The mines can now be opened out at a comparatively small cost, and it is probable that they will again be opened shortly. In addition to extensive beds of iron ore, a very remarkable deposit of magnetic iron ore of great thickness occurs.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

May 11.—A drive along the road from the Miners Arms at Minterley to the wild country lying between Shelve and Middletown is full of interest, scientifically and commercially. We skirt on our left hand the Shropshire mining district. First, there are the stacks, buildings, and white debris heaps of the historic Snailbeach Mine, ascending far up the hill towards the north-eastern edge of the Stiperstones, and its little line of railway, with its ballast of white skimpings shines like a silver streak in the May sunshine. Between openings in side valleys we see where nestle the Perkin's Beach and other mines. As we travel on we know that a mile over the hills to the left are the cheery looking building of the Tankerville Mines, with Bog and Pennerley stretching away to the south-west. Passing the ruins of two or three abandoned mines we drive between the busy, orderly machinery of the Roman Gravels, with an aspect as bright as that of the kindly manly face of Capt. Waters which cheered us on our start. Then we pass the Ladywell and the Grit, both more or less for the present forsaken, the latter particularly so, yet showing many indications of former activity. Even now lads are busy picking over the heaps, and hand-dressing by the stream. Over the whole scene the Stiperstones stand grim and silent sentinels. So we turn to the right over a breezy upland, studded with miners' cottages, each nestling in its own little plot of land, where health, children grow, and the girls get married for the most part before they are twenty years of age; indeed, said my driver they consider themselves forsaken if they are not married before they are 20. We drive past the Weston Spa Mine, and the old Druidical circle of Mitchell's fold, then a mountain walk of a mile brings to the Middletown side of the hill near the Rorrington Mine, which we were told is to be restarted. We rest in the tiny cottage of a miner, one of the smallest we were ever in, but large enough to have reared nine strong children with more to follow. While we are there in comes another miner fresh from his work in the Wotherton Barytes Mine, and we are soon quite at home. A simple, brave, plain, but polite-spoken race these Shropshire miners. You do not meet anything of the rude bluntness in which too many a Lancashire and Yorkshire miner prides himself.

A portion of the North Wales colliers have gone to work, and the rest are sure to follow on the masters' terms. The lawlessness has been confined within the limits stated in a former report. There is much distress among the families, and there is much getting in debt to the shopkeepers, a great deal of which will never be paid. One general shopkeeper in a mining village in the district who, after years of hard honest work, came to grief a short time ago, had no less than 7000/- on his books at the time of his failure, much of which had been incurred during strikes. This is one side of the foot which the shoe pinches.

THE NATIONAL BOILER INSURANCE COMPANY.—The chief engineer of this company (Mr. H. Hiller) in his annual report states that during 1881 intimation has been received of the occurrence of 34 steam-boiler explosions in the United Kingdom. These do not include the explosions of kitchen or domestic boilers, or those attached to heating apparatus for buildings; no fewer than 33 explosions connected with these were reported in the beginning of the year, most of which, if not all, were due to the intensely cold weather at that period. The average number of steam-boiler explosions for the five years, 1877 to 1881 inclusive, is 38.2. Hence the number for the past year is somewhat below that average. The average for the preceding five years was 58.2. There appears, therefore, to be a considerable diminution in the number of such disasters. Our general service of inspection, advice, &c., appears to be increasingly appreciated, especially by the numerous large firms, some of whom have had numbers of boilers installed with us for many years. In almost all cases the connection has been followed by general improvement in the condition of the boilers—not only as regards the reduction of risk, but in matters conducting to their general satisfactory working. There are still many large firms in the country whose boilers are not insured, or under any independent inspection, but our experience of the bulk of those who have joined us manifests the great advantage to be derived by all who use steam-boilers, as our inspections not only reduce risk of explosion—our first object—but are attended, as above stated, by great improvement in other respects. Owing to our general success, especially in preventing disastrous explosions, we are making valuable concessions, and are endorsing the policies to include claims under the Employers' Liability Act, 1880, for personal injury caused by explosion of insured boilers. The most serious accidents to boilers under our inspection during the past year have occurred through deposit, leading to overheating of the plates, the worst cases being in externally fired boilers. In one instance a long boiler heated by the gases from smelting furnaces was entirely severed through the strains consequent on unequal expansion, &c., induced by overheating through the large amount of deposit from the feed-water, mixed with grease carried over from the engine. I have often had to caution firms, both in my written reports to them and in my annual reports, against the dangers arising from the mixture of grease with the flour-like deposit of carbonate of lime, &c. This, like numerous examples which occur, manifests the danger arising therefrom. The firm had, a considerable time before the boiler failed, been advised by me to alter the mode of heating the feed-water, but this was too long deferred."

Petitions for winding-up the Plymouth Pier Company (Limited), and the Industrial Operative Brickmaking Company (Limited), are to be heard on the 19th and 20th inst., respectively.

Meetings of Public Companies.

RIO TINTO COMPANY.

The annual meeting of shareholders was held at the Cannon-street Hotel, on May 5.—Mr. H. M. MATHESON in the chair.

The SECRETARY read the notice convening the meeting and the minutes of the last general meeting, and the report and accounts of the directors, previously circulated, were taken as read.

The CHAIRMAN said—Gentlemen, as you will have seen from an examination of our report and accounts the authority which you gave us in November last has been acted upon, and the financial operation then proposed has been successfully carried out. The sale of the 100,000 shares which were then created produced in cash to the company's exchequer 2,364,550/- 9s. 8d., or 23/- 12s. 10d. per share. As was promised, this amount was applied, in the first instance, to paying off the balance of the 5 per cent. (Spanish Coupon) Bonds, amounting to 1,734,600/- and the remainder, 629,950/- 9s. 8d., has been appropriated to paying off the company's floating debt on current account. The proceeds of the shares were not entirely received till after Jan. 1, so that in the accounts now in your hands there is still a large item shown to be due to creditors on current account, but the entire operation has since been most satisfactorily completed, and this item has been liquidated. You will observe from the balance-sheet that this operation has enabled us to write down the cost of the mines by no less a sum than 960,000/- 10s., so that that item stands at the original amount of 3,695,680/- We have also written a large sum off machinery and plant, and sundry balances, including that of the cost of issuing the Bonds of 1880, have been liquidated. We have said in the report that the only fixed charge now remaining upon the revenues of the company is for 31 years of 155,000/- which gradually liquidates and will extinguish at the end of that period the principal interest of the bonds of 1880. It will be interesting to you to know that this charge is equivalent to a royalty of just 3s. per ton on the ore which is being annually extracted from the mines. In other words, at the end of 31 years the shareholders come into full possession of freehold rights in the company's extensive mineral property, which it has been amply proved will still contain many millions of tons of ore long after the expiry of that period. To one member of the board is specially due the thanks of the shareholders, as well as our own, for the ability and tact which he displayed in carrying on the principal part of the negotiations that have resulted so favourably. I refer to Mr. Henry Doetsch. His colleagues on their part have marked the sense they entertain of his services on this occasion by presenting him out of their own resources with a service of plate of the value of 1500/- The profit on produce sold is 622,785/- 15s., and there are other items which, with the balance brought from last year, make up the total amount of revenue to 845,128/- 10s. This large revenue has been earned upon 258,827 tons of pyrites consumed in England, Germany, &c., and 8493 tons of 21 cwt. copper sold. The pyrites is 17,500 tons less than last year, owing to the depressed condition of the chemical trade; and with regard to the copper I must explain that we were left at the close of the year with 1000 tons in hand, which, had it been realized, would have added at least 2s. to our present dividend. The financial crisis in France, which is fresh in the recollection of us all, had an immediate effect upon the copper market and arrested our sales. That the result is so good is the more satisfactory to the directors as it is to a large extent due to economies in production. The south lode and the Dionisia, which form together but one lode, are now practically connected, for fully half their total length by the prolongation of the principal gallery on the seventh floor. The 1700 metres which have been driven westward are in continuous ore of very good quality, and this work is steadily advancing and will be of permanent value. The directors have ordered the construction of a tunnel on the level of the great railway tunnel to connect the south with the north lode, another permanent work, which will not only form an outlet for the mineral of the north lode, but will also open the middle lode, hitherto only known from the surface indications and the numerous Roman shafts. This tunnel will strike the north lode at a right angle with its axis and 34 metres below the level of the present or upper tunnel in that lode. It will thus give access to a height of ore of from 65 to 70 metres in the eastern portion of the north lode, and of 90 to 100 metres in the western end. I need scarcely add that this important work, the execution of which will take over two years, will open very large masses of ore to easy and economical working. The upper tunnel is steadily advancing along the axis of this lode, and in the portion most advanced the galleries which are being driven to right and left have already proved a width of over eighty metres, without having yet reached either north or south wall. The average copper contents of all the mineral extracted during last year from the entire property was 2.75 per cent. by wet assay. The quality of the present year's output is even a little better, averaging as far as we have gone 2.88 per cent. As I have already said, the chemical trade in this country is much depressed. This has led to a somewhat diminished delivery of our pyrites to our customers, whose contracts are for their consumption—258,827 tons, against 274,201 tons in the previous year. Applications have been made to the three large importing companies to make a large reduction in the contract price of sulphur in the pyrites, on the ground of competition by new processes in the manufacture of a certain portion of their present productions. You are aware that the price is now fixed by agreements entered into between the three companies, implying mutual obligations. Any modification of these must, therefore, be by mutual consent, and it is obvious that we cannot consent to any change which does not protect your interests. The directors will give their best attention to this subject, and you may rely upon our acting in regard to it in a manner which will consist with the true interest of this powerful company. The production of the year was 9466 tons of 21 cwt., against 8559 tons in the previous year, an increase of 907 tons. The spring of 1881 was more than usually wet in the South of Spain, but since that time no heavy rains have fallen, the summer, autumn, and winter having been unusually dry. We have had to pump back over the calcination ground the water which has been already used, which otherwise would have gone to the river, an operation not free from inconvenience and expense. In order to obviate the necessity of this, and to keep pace with our increasing production of copper, we have begun the construction of an additional reservoir on an elevated spot at some distance from the mine, to contain something like 2½ millions of tons of water, and we expect it will be ready for use against the setting in of the autumn rains. This reservoir will supply its water to our highest works by gravitation, and ought to save us a considerable outlay now necessary on pumping. The average copper contents of our imported pyrites, by Cornish or dry assay, has been 2.38 per cent., and the mineral laid down for the manufacture of copper at Rio Tinto has been of a somewhat higher percentage than formerly. I may state that the quantity of ore, both burnt and crude, upon the ground at Rio Tinto in process of treatment now contains not less than 33,000 to 35,000 tons of metallic copper, the principal cost of which has already been charged. This, therefore, forms a valuable reserve. We have discontinued for the present the extraction of silver from the mines, although the process adopted was quite successful it involved a considerable addition to the work of our staff, and diverted attention from other things more profitable to the company just now. The possibility of extracting gold from pyrites on an important commercial scale, the discovery of which was asserted about the period of our last annual meeting, does not appear to have been confirmed. Owing to continued depression in the iron trade, our sales of iron ore have been very limited, and have been confined to shipments for the United States. I may mention that our engineers have recently surveyed more accurately the deposit of this ore at Rio Tinto, with the result that we may reckon upon obtaining from 5,000,000 to 6,000,000 tons from the Mesa de los Pinos. I and two directors have recently returned from a visit of inspection to the company's property and works, which I may almost describe as an annual visit. I am glad to say we found all the works in excellent order, and every department carried on with the utmost energy and zeal. It was necessary for us to order the erection of further workers' dwellings, the number of people in the company's employment having considerably increased, and being now over 11,000. I am sure you will hear with interest that on this occasion we met the distinguished honour of receiving a visit at Rio Tinto from H.M. the King of Spain, who had expressed a desire to inspect the wonderful property of which he heard so much. We felt it right to make all proper provision, so far as the short notice which was given us would admit, to make the Royal visit as agreeable and interesting to His Majesty as possible, and I am thankful to be able to say that we succeeded in such a way as to draw from His Majesty the warmest expressions of gracious approval. The King examined the company's works, as well above as below ground, with the greatest interest, and was profoundly impressed by the importance of such large industrial works in this part of Spain. As an additional proof of the impression made, two of His Majesty's sisters, the Princesses Dona Isabel and Dona Paz, have since paid a visit to the mines and expressed themselves much gratified. I now close this statement by moving that any shareholder has any question to put I shall be glad to answer to the best of my power, so far as may be consistent with the company's interest.

The Hon. T. C. BRUCE, M.P., seconded the resolution.

A SHAREHOLDER asked the Chairman to state the safe value of the reserves of 35,000 tons on the mine?—The CHAIRMAN: The 33,000 or 35,000 tons which I said was laid down at the mine and in process of treatment for yielding copper are in two classes—one is what we call *terrores*, heaps which are formed of ores that have been washed, besides other ores which we treat in a particular manner. These stand in the books at 5/- per ton, and if we deduct in addition to that the expense of precipitating the copper and sending it to market, the portion (25,000 tons) may be taken as worth from 45/- to 50/- per ton net. The other portion is more recently put down, and will yield more quickly a larger portion of its copper. It will probably be worth 40/- per ton. Between them there is fully 1½ million sterling represented in the ores in question.

Mr. BAILEY: Can you tell us how the Doetsch process, which was introduced two years ago, has succeeded; and may I ask you whether, as you have paid at the rate of 16 per cent. this half-year, you will be able to give us the same dividend next half-year?

Mr. BRACKSTONE BAKER: I am rather a new shareholder, and somewhat of a novice in the company's affairs; and I would ask what is the meaning of overburden, and why is a sum of money applied to the removal of it? I would also ask a question incidentally arising with respect to the French financial companies which have come to a disastrous end, and that is whether the shares

A SHAREHOLDER : I will ask one question, if it is consistent with the interests of the company; that is, what steps were taken to get the highest price possible for the 100,000 shares, because the difference between the price they realised and the market price was then very considerable?

A SHAREHOLDER : There is one item I do not understand, which is made up of three items. It says, "In extinction of the expense of that issue, and of the balance of the cost of the issue of 5 per cent. bonds, as well as sundry small items amounting in all to 279,000." —Mr. PATON : Supposing the profits of the present year would allow of a larger dividend than has been paid in the last year (which is 14 per cent.), what difference would the re-arrangement of capital make to that—that is, substituting the shares for the bonds?

The CHAIRMAN : A gentleman asked about the Doetsch process. It is a process which was invented or discovered in order to do away, as much as possible, with the burning of pyrites at the mine, which has an injurious effect upon the surrounding country, and which at one time was considerably complained of. The success of this process has been considerable. We have two very large heaps, one of which has been a year and a half in operation, without a ton of burnt ore, and we have already extracted half the original copper contents, and the rest will come gradually and economically out by the process referred to. There is no doubt it is a success, and we are extending its use gradually, as well as that of other methods which have the same object in view.

Mr. BRACKSTONE BAKER : Is it a chemical process? —The CHAIRMAN : It is a chemical process, but it is not a very mysterious or expensive one. It is a process which we can adopt upon a large scale without any great outlay of money upon it. With regard to the second question, I should be very glad if we could anticipate what the dividend will be for the next half-year, but I have very little reason to doubt that the shareholders will be satisfied with it. With reference to the term overburden, I am sorry anyone has been disturbed about it. A large portion of our mine is worked by what is called open cast, in fact a quarry; but before we arrive at the mineral we have to remove what is above the mineral to an average depth of about 30 metres. It has to be taken out and tipped. A portion is picked out containing hematite iron, but substantial it is waste, and has to be removed at a certain cost per ton. This stands in an account in the books of the company, which is credited with a certain charge upon every ton of ore extracted. Over-burden is the cap before you arrive at the mineral, and has to be removed. I do not know whether any more need be said with reference to shares being absorbed in France. No doubt the gentleman there is right. They have been entirely absorbed, but the whole of the new issue is in the form of "bearer" shares, which are not registered in the books of the company; therefore, we do not officially know where they are, but we have pretty good reasons for believing that they are well held. A gentleman asked what steps were taken to obtain the best market price for the new shares when they were issued. We certainly did not offer them in the market, or hawk them about, but we entered into treaty with an eminent financial establishment in France, and a proof that we got a very satisfactory price for the shares is this—that for a considerable period after the transaction was completed they were at 23 to 23½, and even below 23 in the market, and that we should have obtained so good a price is certainly a matter of great congratulation, not only to us but also to the shareholders at large. (Cheers.) In regard to the amount which was liquidated out of the large profit upon the shares, about a quarter of a million had reference to the issue of the bonds of 1880. At that time the credit of the company was not quite so good as at this moment, and our bonds, which are now above par, were issued at a figure considerably below par. We did our very best at the time, and that is the principal item in the 279,000; the other are minor matters, which we took the opportunity of having a balance to deal with to wipe out of the accounts, which accordingly now stand in a more condensed form.

With reference to the present issue, I may mention that not one shilling of commission or discount of any kind was paid upon the operation. I think my friend Mr. Paton asked, as we saw the means of paying 14 per cent. for the year 1881, what addition would be made to that dividend by the operation which has now been reported. I cannot anticipate what rate we shall pay, but I repeat what I said in reference to the first question, that from the appearances as present the shareholders are likely to be well satisfied with the next dividend.

Mr. MACKAY : I think it was understood that we were to get some extra benefit next year from the operation.

The CHAIRMAN : My friend cannot object to get a portion of it now. We have seen our way to give you a decided benefit now, and if we are able to maintain such a good result we shall be well pleased.

The resolution for the adoption of the report and accounts was then put and carried unanimously; the further dividend of 16s. per share was declared; the retiring directors, Messrs. John MacFarlan, and James A. Crawford, were re-elected; and Messrs. Turquand, Young, and Co. were re-appointed auditors; and the usual votes of thanks to the Chairman and directors terminated the proceedings.

VISIT OF THE KING OF SPAIN TO THE MINES OF RIO TINTO.

The popular young King of Spain, while on his visit to the southern part of his dominions, signified his Royal pleasure that he wished to see these mines, now of world-wide fame. Six hundred years had elapsed since the province of Huelva had been visited by a King of Spain. It had been mooted that there was a likelihood of His Majesty visiting the mines, but nothing definite was known till the beginning of the week, when the manager received a telegram to the effect that the King, his Consort, and the Infanta Dona Eulalia, with the Ministers of Marine and State and other distinguished officers, would arrive at Rio Tinto on the evening of March 3. Then all became bustle and stir; habitations had to be prepared for the Royal personages and for their numerous retinue, and decorations had to be thought of and carried into effect. Under the special direction of the able and highly respected manager, Mr. CHARLES T. PREDDELL, all preliminary arrangements were carried out in the most satisfactory manner; and the transformation which the little town underwent in the few days which were given for preparation was truly remarkable.

The general and varied display of decorations was all that could be desired. Throughout the town and neighbourhood flags and bunting were spread to the breeze in profusion, and these, with an abundance of plants and evergreens from the neighbouring hills, soon gave the place a very gay and festive appearance. Photographs of several of the buildings and of a beautiful arch erected on the parapet of the Santa Barbara Bridge were taken, as well as a panoramic view of the whole mine. One of the principal difficulties was how to provide accommodation for so many in a town so crowded as is the Minas de Rio Tinto. This was in a great measure got over by the happy thought of turning for the moment the new and commodious offices of the company into sleeping apartments, which was effected with the utmost alacrity and with great taste under the superintendence of Mr. J. S. Hindson, chief of the construction department. On the morning of March 2 a telegram was received from the Chairman that the King and his suite, without the Queen and Princess—they remaining with the Duke of Montpensier at San Lucar de Barrameda—proposed to arrive that evening at the mines, and asking if they were in a position to receive His Majesty. A reply in the affirmative was at once sent, and additional pressure was put on to have everything in readiness for his reception.

Arriving at Huelva in the afternoon, and after having taken lunch at the old Monastery, the Ralda—the place from which the great navigator Christopher Columbus sailed when he discovered America—His Majesty received on board his ship the Chairman and two directors of the Rio Tinto Company, who had come out on a business visit to the mines. He was thereafter enthusiastically received on the Town Pier by a large crowd, who followed him to the chambers of the Provincial Deputation, where he received addresses and congratulations from various corporate bodies, and where the principal people of the town and district were presented to His Majesty. After visiting the Agricultural and Mercantile Club, the church, and other places of interest, he proceeded to the railway station of the company, which was suitably decorated, and was lustily cheered by the hundreds of workmen who turned out from the company's shops to witness his departure to the mines. Under the guidance of Mr. William Langdon, the chief mechanical engineer, locomotive, and traffic superintendent, His Majesty reached the mines safely at 10 P.M. At the various stations along the line there was no lack of decorative display and no absence of cheering. The distance is 33 kilometres, and the route is through the most picturesque scenery, along the rough and winding course of the Rio Tinto, whose deeply tinted waters from the oxide of iron amply justify its name.

Besides the Minister of Marine and a brilliant staff, His Majesty was accompanied by Mr. Hugh Matheson, the Chairman, and Messrs. Doetsch and Schröder, directors of the company. Long before the train arrived an immense crowd had congregated to view their king, on whom few present had gazed before, on His Majesty stepping from the carriage to the temporary platform which had been erected in front of the open cast of the mine, he was received by a simultaneous and hearty cheer, six times given, which burst forth from the English members of the staff who were assembled at the foot of the platform to the number of 50—such a cheer as can only be given by a body of true and loyal Britons. A number of their ladies were also present, who likewise heartily cheered and waved their handkerchiefs.

Immediately on the last burrah being ended the band struck up "La Marcha Real," or national air, during the playing of which the Royal traveller with his party took their way to the Casa Grande, amidst the *civis* of the multitude. The pathway was splendidly illuminated by the electric light, one of the six lamps of 800 candles, each being so placed as to throw its light on the advancing crowd. At intervals along the line of march bazaars were posted, and these, together with the civil guards and the company's guards, kept the path-way comparatively clear for the Royal party, who, without difficulty reached the directors' house, where they were to dine, and where the King, with several others, were to sleep. The concourse of people in the plaza in front of the Royal residence was very large, probably from 10,000 to 15,000—and from them the young monarch received a very warm and enthusiastic reception.

After dinner His Majesty sallied forth about midnight, accompanied by the directors, the managers, and several others, for the purpose of visiting the underground workings of the south lode. At the place where they had left the carriages earlier in the evening a couple of locomotives, with two platform wagons covered with a canvas awning and suitably seated, were in readiness to convey them to the south tunnel, being the principal entrance to this part of the mine. A smart drive through the strongly built arching in the tunnel brought them to where the miners were at work, and where they were met by Mr. James Osborne, the mining engineer, who was to conduct them through the mine. After reaching as far as the locomotives could proceed—a distance of about 1500 yards—the party alighted from the wagons and went on foot to the end of the tunnel, where the McLean rock drills are at work, driving onwards to the San Dionisio lode. His Majesty the while putting very pertinent questions regarding the working of the mine, &c. Retracing their steps to the wagons, and taking their seats, they soon found themselves at the Casa Grande, retiring soon after to their respective bedrooms, now about 3 o'clock A.M.

At 8:30, and after having breakfasted, the whole party proceeded to the large opencast, which they viewed with astonishment. As time was on the wing and much had to be seen, they at once took their seats on three platform wagons and were driven to the north end of the San Dionisio lode, the train being in charge of Mr. Thomas H. Perry, the local traffic manager. At the principal shaft of this lode they inspected the powerful Cornish pumping machinery erected by Messrs. Harvey, of Hayle, the not less powerful winding machinery also by Messrs. Harvey. The Albert, Edward, and Alice shafts sunk in this lode, and now in working order, were pointed out to the party as they

passed them. The train was then run through the calcination grounds and down to the cementation tanks where the copper is precipitated. Here His Majesty was greatly interested, and evinced the greatest desire to become thoroughly acquainted with the working of this department, which was evidenced by the very pertinent questions he put through Mr. Doetsch to Mr. Francis Bayden, the chief of the department, as to the percentage of copper in the liquors, the quantity of pig-iron consumed per ton of copper produced, and so on. There are about 6 miles of tanks employed in the precipitation of copper. Leaving this interesting part of the company's operations, the next half was made at the large ore-crushing works recently erected by Messrs. Tannett, Walker, and Company, of Leeds, through which His Majesty was taken by Mr. Henry B. Fulton. Proceeding by the high level line of railway they soon reached the north lode, an enormous deposit of mineral only recently begun to be worked, and observed the numerous shafts which have been sunk, and at some of which heavy winding machinery is in course of erection. While here, the king having expressed a desire to inspect the houses of the workmen, the next half was conducted to a series of cottages which have been lately constructed, into two of which His Majesty entered, and so pleased was he with the efforts that are being made by the company to provide suitable dwellings for their numerous workpeople that he left a handsome sum to be divided between the fortunate occupants of the two houses he inspected. No time was lost in returning and taking the points of the low-level line of railway that leads into the heading which has been driven in this lode; and very soon the party found themselves with no more light than that produced by a few of the miners' oil lamps. On reaching the part in this tunnel where the principal mining operations are being carried on the train was stopped, and His Majesty conversed freely for some time with one of the miners, asking questions about the hours of labour, the effect of the cuprous water on the clothes, &c. Both in going and in coming out of this heading, the awnings of the platform wagons came in contact at one spot with the roof and sides of the gallery, causing a little excitement amongst the travellers. His Majesty, however, seemed to enjoy the little incident, for, while there were loud calls to slacken speed, the king sang out, "Adelante la maquina—full speed"—which order was instantly obeyed, and the train soon thereafter emerged from the tunnel. The numerous workmen at the north lode, as everywhere else, loudly cheered His Majesty, and hailed him with "Viva el Rey," "Viva Alfonso XII," and to these acclamations the king bowed right and left. In due course the party reached the Casa Grande, and after having partaken of dejeuner they were escorted to the Royal train, and went off at three o'clock P.M. amidst the vociferous cheering of the English and the vivas and acclamations of the assembled multitude. Arriving at Huelva about six o'clock in the evening, the train proceeded along the magnificent pier of the Rio Tinto Company, and his Majesty had the pleasure of seeing several wagons of ore safely deposited in the hold of the fine steam ship Valencia, of Ardrossan, Capt. Ewer doing honour to the King by firing a royal salute.

It should be mentioned that during the visit the directors arranged to have the mines put into direct communication with Madrid, and the King sent telegrams to the Queen and the Prime Minister. It was at Rio Tinto that His Majesty heard of the firing at our beloved Queen, and at the luncheon table he wrote with his own hands a telegram of sympathy to Queen Victoria, receiving a reply on the same evening.

After dining in the house of Mr. Sundheim, the German Consul, who has done much for the Province of Huelva, the King at a late hour went on board the frigate Ligera, en route for Sanlucar de Barrameda, to rejoin his consort and the Princess.

Messrs. Abraham Coventry, G. W. Melley, Riley, and Charles Schiff were then elected directors, and Messrs. Price, Waterhouse, and Co. were appointed auditors.

A vote of thanks to the Chairman and directors terminated the proceedings.

Subscribed to a greater extent is, I think, a misconception on the part of the public. They have imagined that all these shares would be taken up by the bondholders, and they have not allowed for the circumstances I have mentioned which have operated to prevent them being so taken up. Another reason why the shares were not more readily taken up is that unfortunately we came out at a time when there was not much disposition in the money market to subscribe. Notwithstanding this 404 out of the 10,000 A shares have been subscribed. I think if the position of the company—the shareholders of the company—were really known there would be no hesitation whatever on the part of the public in coming forward, because under the arrangement which we have made with the bondholders who have come into the company they not only get these instalment certificates which represent their bonds, payable out of 70 per cent. of the proceeds of sales of the trust lands, but they also get B shares, which entitle them to a large share in the reversion of the property, and in return for these they give us 30 per cent. of their share of the proceeds of sales, and that 30 per cent. will secure the interest upon the A shares and eventually liquidate the A shares. Now, gentlemen, seeing that 1405 out of the 2000 bonds have so come in, what is the result of that? The result of that is this: that if we were now to sell these lands, which are now estimated in point of extent at 600,000 acres, if we were to sell these lands for only 10s. an acre we should have a fund of £30,000, or considerably more than half of the whole capital of the company. (Hear.) There can be no doubt whatever that the interest which is cumulative on the shares is well secured, and this independent of the operations of the company. The 100,000, the capital of the company, is also secure, because although the lands which we have sold only average 81 7s. c. per acre, it must be recollected that these sales have been ex-minerals. We have within the last fortnight received offers here which I hold in my hand, some of which we have accepted, for the purchase of lands with the minerals, amounting to 17s., 19s., and 18s. per acre. When, therefore, we begin to sell the mineral lands extensively it is perfectly clear we shall get very considerably more than 10s. per acre, and we consider the price we have now got of 17s. or 18s. an acre comparatively low, but we know that the parties who have made these bids are about to open furnaces and a colliery, and we know that they have means at their disposal. Well, gentlemen, I hope that with this explanation many of the shareholders will be inclined to extend their investment. We have done our best to obtain subscriptions and to disseminate information. The committee before leaving office compiled a pamphlet in a form for circulation and distribution in order to promote development, and if the shareholders of this company will only use their best endeavours to interest their friends in the district, and to circulate these pamphlets, which you can have in any quantity, they will be doing a great service to themselves, and to all persons interested. With this statement I will proceed to the special business of the meeting. As regards the directors the committee could do no more than name themselves as directors in the Articles of Association until this statutory meeting should take place, when the power of electing the directors is delegated to you as shareholders. I am happy to say that we have also induced Mr. Riley, the eminent metallurgist, to join the board. Mr. Riley, I suppose, has as much experience, if not more, than most gentlemen in the City of London in the matter of both coal and iron, and he is one of the patentees of the process for converting iron into steel, now being very extensively worked at Middlesbrough, in the North-East Riding of Yorkshire. The other directors are, as I have said, the committee.

Messrs. Abraham Coventry, G. W. Melley, Riley, and Charles Schiff were then elected directors, and Messrs. Price, Waterhouse, and Co. were appointed auditors.

A vote of thanks to the Chairman and directors terminated the proceedings.

MECHERNICH (RHENISH PRUSSIA) MINING COMPANY.

The annual meeting of shareholders was held at Cologne, on April 29.

The CHAIRMAN said: In accordance with the rules of the company I have to day to report to you upon the position of our company and the results of the last year. During the last year the affairs of our company have been further consolidated, and we believe that we can count upon a future prosperous development of our undertaking. In spite of the balance of last half-year, which has been placed in your hands, exhibiting a further improved financial condition of our company, it shows, on the other hand, the gross profit to be mks. 345,730 84 less than that of the year before, corresponding with the lower prices of lead, which the year 1.31 brought us. Although the writing off mks. 511,220 64 for the consolidation of our position is much less than the year before, it still not only covers the improvements and additions during the last year, amounting to mks. 362,697 37, but leaves also an actual reserve of mks. 118,833 27. Taking into consideration the state of our financial affairs, and, moreover, as we expect that the present will show a similar result, we thought this writing off sufficient, and hope that you will share our opinion. We, therefore, ask your permission to declare a dividend of 13 per cent. for 1881 out of the net profit of mks. 1,380,482 55. BALANCE.

	Marks.	Marks.
Mining property, 1880	5,236,821 27	
Addition in 1881	123,114 13	
		5,409,945 40
Written off	350,000 =	5,059,595 40
Ground property, 1880	938,539 16	
Addition, 1881	5,665 14 =	944,234 30
Offices, workmen's dwellings	262,408	
Written off	9,571 =	253,037
Inn for miners	17,870 22	
Addition	97,149 33	
Hospital for miners	37,653 =	152,669 55
Smelting works	314,827	
Addition	44,738 01	
		299,565 01
Written off, 7½ per cent.	26,968 01 =	332,607
Railway property	805,086	
Addition	60,799 01	
		865,885 01
Written off, 7½ per cent.	64,941 01 =	800,344
Machinery	997,756 32	
Addition	29,239 39	
		1,026,996 71
Written off	59,046 62 =	967,050 05
Dobtors		1,242,807 85
Materials, &c.		431,612 19
Stock of ores and metals		834,522 65
Cash, bills, and investments		1,279,795 31
		Mks. 12,299,195 34
Cr.—Capital	9,600,000 00	
Creditors	358,702 79	
Reserve Fund	980,000	
Profit	Mks. 1,691,719 19	
Written off, as above	511,220 64 =	1,380,482 55
		12,299,195 34

The MANAGING DIRECTOR said: While the different reports establish the gratifying fact of continual improvement in mining affairs we cannot give the same good account of the lead market. Our article, on the contrary, experienced a further deterioration, even at the beginning of 1881, so that the price of lead during the last year averages about 10 per cent. less than the year before. Great fluctuations in the price of lead did, however, not take place last year. The quotations at the beginning of 1881 were about the same as at the end. In London the price of lead rose in October to 15s. 2d., which corresponds with mks. 29 per 100 kilos. The average price of last year was for English lead 15s. 2d., for Spanish 14s. 12s. 4d., which corresponds with mks. 28 4d. and mks. 27 4d. per 100 kilos at Cologne. On the Paris Exchange lead was quoted at prices which give an average price for the year of 33 23 francs, corresponding with mks. 27 77 in Cologne. As far as could be ascertained by the sales made by the different smelting works, prices of Cologne gave yearly average mks. 29 21 per 100 kilos. The quotations at the Rotterdam Exchange are no criterion for the true price of lead, as quotations there differ greatly from prices really obtained. Some brands were quoted at prices which they cannot have even approached. This fact having been made known contracts neither for ore or lead itself are ever made on

lead and 4438 kilos silver. As the present number of furnaces will not allow an increase of production the building for the roasting furnaces had to be lengthened by 65 metres, making the total length 323 metres, and two furnaces are now ready for use, while two others are in course of construction. The building of the blast furnaces had also to be enlarged, and two new furnaces have been added, making nine in number. Corresponding with the great production of lead, the working of the blast furnaces required a stronger blast, which was provided by a newly erected Bostock ventilator of the most extensive dimensions, which will shortly be added a second.

The inn for 400 miners, already commenced in 1880, is under roof, and will be completed by August. The average number at the mines and smelting works was during the last year 3887; the largest number—4182—employed in December, and the smallest—3713—in August. Our railway 92,813 persons (10,000 more than last year) were conveyed between Mechanic Station and Virginia Pit. The wages did not differ much from 1881. Whilst in 1880 they were \$1.10th per cent. higher than in 1879, we only had an increase of 2.3-10th per cent. against 1880. At the end of 1881 the companionship of miners numbered 1195 permanent and 2987 temporary members. The pensioners were 75 disabled miners, 186 widows, and 309 orphans. The capital of the companionship amounted at the end of 1881 to mks. 153,315.19. To return to the financial state of our affairs, I beg to draw your attention to the following: The working capital is formed by debtors, stocks, and bills, and investments, amounting to mks. 3,788,738, or mks. 14,240.30 more than last year. The debts consist chiefly of money due by bankers and invoices not settled at the end of the year. The stocks are valued, according to our rules, at cost prices and, therefore, under the price of the day. Investments are put down at the course of Dec. 31, 1881. The creditors represent mks. 358,702.79 (24,80.01 more than last year), and comprise mks. 77,700 interest, paying capital of the companionship mks. 93,019.63, wages due about 188,000 marks for material used during December and not yet paid for: 22,490 tons of lead, 1051 tons potter's ore, 4438 kilos silver, have been sold during last year. All sale prices were lower than the year before—lead about mks. 2 per 100 kilos, less, potter's ore mks. 1 per 100 kilos, less, silver mks. 1 per kilo. We have again been fortunate in sustaining no losses in 1881. From these remarks you have the proof of the successful development of our undertaking. Considering the low prices of lead during the last four years and the favourable result obtained during this time, you will be convinced that our mines can show good results even with such low prices, and we, therefore, hope for similar success this year.

THE QUARTZ HILL CONSOLIDATED GOLD MINING COMPANY

An extraordinary general meeting of shareholders was held at the New Exchange Buildings, George-yard, Lombard-street, on May 4 (Mr. FRANK POWELL in the chair), for the purpose of receiving a statement as to the present position and prospects of the company, and passing such resolutions thereto as might be deemed advisable.

Mr. J. J. TRURAN (the secretary) having read the notice convening the meeting,

The CHAIRMAN said: Gentlemen, as you are aware, by the notice of meeting which has just been read by your secretary, the directors have called the shareholders together for the purpose of laying before them a statement of the present position and future prospects of this company's affairs, and after we have given you all the information we possess on these points, it is our intention to propose to you for your consideration a scheme for obtaining the funds necessary for the future working of the property. It may be as well if I briefly tell you, for the benefit of those who are ignorant on the subject, how I, personally, and my colleagues, Mr. Jay and Mr. Marshall, are before you to-day in the place of the directors whose names appeared upon the prospectus, and who have had until recently the conduct of your affairs. Without going at length into matters which do not concern the general body of shareholders, it will suffice to state that certain transactions entered into on the Stock Exchange resulted in several members of that body being compelled by the operation of its rules to pay for a very large number of Quartz Hill shares at a high price—in most cases a considerable premium—and they thus became shareholders in this company. I need hardly say much against their will, of course, by taking away our pay ground, the necessary work for the future having been left undone, we are rapidly approaching the end of our resources; and I will now read to you a portion of a most important letter received from our superintendent Mr. Craven, under date March 14, 1882, dealing with this question. It runs thus:

"Your letter of instructions has arrived, and, as far as possible, shall be complied with. Clause 3, in which you say the mine to be worked so that the produce shall yield not only sufficient to pay the working expenses of same, but also a dividend to the shareholders, is simply impossible. To attempt to work out the only pay we have in sight at present without developing the other parts of the property, would only place the mine in a worse condition at the end of a year's time, and take us much longer to get it into good condition than if we commenced at once. You must make up your minds to spend at least 8000£. to 10,000£. in the mine before we can make great returns, and, as I have always explained, it will take eighteen months to two years to develop the unexplored ground."

You will see by this letter, gentlemen, that Mr. Fagan clearly warned the board that the mine could not be made a permanent success unless the necessary developments were made in it, and the result has proved his words, for the mine, roughly speaking, has been about paying its way since then; but, of course, by taking away our pay ground, the necessary work for the future having been left undone, we are rapidly approaching the end of our resources; and I will now read to you a portion of a most important letter received from our superintendent Mr. Craven, under date March 14, 1882, dealing with this question. It runs thus:

"The most important matter is the manner in which we are using up our pay now available. I think that by the middle of May this will probably have been exhausted, and we must then look to the directors for more money, or shut down the mines. Of course I may err in this judgment, for from the nature of our crevices there is much guess work about such a prophecy, but that is my judgment. I dare not put the day any further off, and I wish to give the board ample notice. Perhaps the pay available may not carry us so far even. The damage that would ensue from allowing the mine to fill with water would be very great, particularly below our 1200 level, our walls are very bad indeed. We have had more trouble, and been at more expense in timbering there than in any other part of the mine. A week's cessation of pumping would flood all this ground, and the effect would be to bring down hundreds of tons of rock, which would not only demolish our present expensive timbering, but would make a frightful chasm, to be a constant source of trouble and danger in the future. Much money were spent in timbering it elaborately. If the water should rise above the 1200, however, the damage to the walls would be prodigious. The walls in the Kansas Mine have, for the most part, been very good, and very little timbering has ever been required or done. By exposure to air currents, however, in the mine passages, and by the percolation of water, the wall rock, which the present timbers hold very well now, would become water-soaked, and soon after the water had been removed, or before, they would fall, causing great damage. A mine better timbered by necessity in the first place could far better stand such a trial."

Mr. HANSON (our confidential agent at the mines, who has charge of our finance there), also writes under the same date as follows:—

"As we have no intimation that we can go on with our developments, and have here no means of judging how long it may be before funds are at command, I must impress upon the board that, while we are carrying out to the best of our judgment their order to so work the mine, that it will pay its expenses, we do not feel sure of being able to do this for more than a couple of months from the present time. We are not in a position to discover new pockets of ore, and, of course, there disappears all chance of paying our way when the present ones have been worked out. It is a little difficult to estimate their extent; but, taking warning from the suddenness with which they sometimes play out, and judging by what is in sight, we cannot guarantee that the mine will meet its expenses for more than the time named. It may be that the pockets are larger than we can safely estimate them now, and it may be that they are not. If the latter, then we would be compelled to close the mine. This would be of such very serious import to the country that it warrants the board's very serious consideration of it."

These letters, gentlemen, speak for themselves, and you will agree with me that what we do must do quickly. I will now read you an extract from a letter from Mr. Craven, dated a week later, in which he says:—

"After a careful inspection of the mine, this morning, I cannot help feeling much encouraged as to the future of the mine, particularly in our bottom workings: 1275 west there has been a steady improvement during the past week. We are now driving two drifts nearly parallel and westward in this ground, and stopping over both. Particularly over the north one has there been a great improvement. A few days ago this looked very poor, but by offering good terms to a party of tributaries I induced them to try the ground, and they opened up a fine body of ore immediately. This now shows nearly or quite 1 ft. of smelting ore, worth probably over 50 per cent, per ton, and considerable mill ore, probably worth over 6 ozs. of gold per cord. However, there is no indication of there being any permanency to this; it is probably only a bunch of greater or less extent. The south drift, however, is the better of the two so far as there are indications of permanency; it carries nearly or quite a foot of smelting ore in the breast of the drift, which appears to be very good." To further convince you, gentlemen, that we have a mine, and a good one, I will, with your permission, read you a part of a letter from our superintendent, Mr. Craven, in which, speaking of the yield of ore, he says:—

"In the first part of February it ran only at an average yield of 3 ozs. of gold per cord, but steadily improved, until at the last return it had reached a yield of 6½ ozs. per cord."

And again, under date March 28, he says:—

"In my letter of Tuesday last I referred to some ore which had come from the back of the north drift 1275 west, as being worth probably 50 per cent, or over per ton for smelting ore, & 6 ozs. or over per cord for mill ore. To our surprise the ore proved astonishingly rich; 1703 lbs. of first class smelting ore netted us \$173, or at the rate of \$204 per ton; 2371 lbs. of second class ore sold for \$164, or at the rate of \$114 per ton. The mill ore yielded 8 ozs. 12 dwt. gold from 1½ cords. This is about the best ore that the mine has yielded since I have had charge of it."

This, gentlemen, seems to me a most satisfactory improvement in the grade of ore, a cord being equal to 7 tons. You have, in the instances I have quoted, an average of nearly 1 oz. of gold to the ton, which is, of course, an excellent yield. I think I must trouble you with one more letter; it is the last we have received from the mine, and is dated April 11, and runs thus:—

"The condition of our affairs here continues unchanged. The mine has turned out more and better ore for March than we could have hoped for, and when the accounts for that month are all in and settled up, I think that we shall have cause to be very well satisfied with the final result. The output of smelting ore has been the best feature, and I am told by the sampling-works people, through whom we sell our ore to the smelters, that no mine in the country produced a higher grade than the Kansas did for March. That is no mine of the same character as ours. The returns on a number of lots are not yet received, but before the end of the present week we expect to have them all in, and in my next letter I shall endeavour to give the board a statement which will show what we did in smelting ore and mill ore, and which I think will prove very satisfactory as a proof that we now have an excellent mine, and one which promises very well for the future. When I say an excellent mine, I mean one that gives evidence that it would pay well if properly opened and worked. Every day's progress only confirms me in this opinion. The outlook in our bottom workings is excellent, and in the 800 west is good. I am now very busily engaged in making a careful survey of our lower workings. From my notes I purpose to make a map with annotations from our record of the past few months, which I hope will have the effect of convincing the board that they have every encouragement to appropriate a sufficient amount of money to open up the ground."

And later on he says:—

"If only the past winter had been devoted to sinking shaft and driving drifts we should now have been in position to make money." However, it is useless having even a good mine without the means of working it, and that is our position, and we estimate that it will cost us between 10,000£. and 15,000£. to develop the property and make it riches available to us, and we propose to ask the shareholders to find this amount by issuing debentures in amounts of 50£. and multiples of 50£., at 10 per cent, interest; and as we have a large number of unallotted shares, and hope soon to have a still larger number, we propose as an additional inducement to the shareholders to subscribe for debentures to give the holders the right to exchange for shares any time within two years. Should the amount raised in this manner prove sufficient, as we believe it will, to develop the mine into a large and successful property, the option of exchange into shares will become a valuable one. This, gentlemen, we consider to be the most likely way of raising the money, but we are not wedded to it if a better one can be suggested by anyone; but, before I sit down, I would once more impress upon you that the matter is urgent, and that unless

we in our endeavours to reduce the nominal capital, provided we find a sum of not less than 10,000£., to be spent upon the development of the mines. I have also to remind the shareholders that by an agreement adopted by the company, Mr. Fagan was appointed manager for a period of three years, at a remuneration of 5 per cent. of the net profits of the undertaking, and although, owing to disagreements and disputes with the then directors, which have since been settled, Mr. Fagan has not been superintending the working of the mines, we believe it is his intention to return to Colorado and do so, as soon as the company is prepared to develop its property. This agreement, gentlemen, is one that the directors have no control over. It is binding upon the company, it having been made by Mr. Fagan a condition of his sale to Mr. Woods Temple, and adopted in our purchase, and without expressing any opinion as to whether it is a good or bad one for us, we think it would have been much better if the shareholders had been left free to select their own manager. Mr. Fagan (who is here to-day, and I hope will presently tell us something about the mines) was perfectly within his right in making any stipulation he thought proper in the matter, and, of course, he is equally interested with ourselves that the property should be made successful, as he is a large shareholder in the company. I have now to refer to certain actions commenced by Mr. Bebo against the company, on behalf of ten shareholders, whose total holding is 155 shares. They claim to have their names removed from the register, and their money returned. We are advised that they have no sufficient ground upon which to rest such a claim; but leaving that question on one side, we scarcely think that the shareholders themselves (one of whom is ex-Governor-General Eyre, interested to the extent of 10 shares) can be aware of the risk they are running in the matter of costs should they be unsuccessful, as the action is against five defendants, and, in the event of failure, they would individually be liable for the costs of all the defendants—seeing, as I have said, that the total sum invested is only 155£., one must consider that they are risking a good deal of money with the view of getting that amount back. Before I proceed, gentlemen, to my last point—viz., what your directors advise and propose for the future—I will tell you briefly our present position. Out of our share capital of 205,000£., we have issued 164,064 shares; from this number you must deduct 6911, being the number forfeited for non-payment of calls; this gives us 157,153 as the number now in existence. Mr. Fagan has, under conditions, promised to return to us 5000£., and, as I have already told you, we confidently anticipate a very large reduction as the result of our action against the promoters. Our financial condition is as follows: We have as an asset our mine properly conveyed to us and in our possession, and our liabilities consist of overdue bills, 8032.14s.; due to myself for the advance I have spoken of, 500£., and a few small debts, altogether, say 1500£. We have no liabilities in Colorado, but, on the contrary, there is a small amount standing to our credit at the bank there of about 300£., so you will see, gentlemen, that our position need not by any means be looked upon as a very bad one, if we are only willing to pull together and help ourselves. I propose now to read to you two or three extracts from letters received by the board from the mines, and I think it is due to Mr. Fagan that I should read you one from our superintendent written to him by the board then in office, dated Denver, August 12, 1881. He says:—

"Your letter of instructions has arrived, and, as far as possible, shall be complied with.

"Clause 3, in which you say the mine to be worked so that the pro-

duce shall yield not only sufficient to pay the working expenses of same, but also a dividend to the shareholders, is simply impossible. To attempt to work out the only pay we have in sight at present without developing the other parts of the property, would only place the mine in a worse condition at the end of a year's time, and take us much longer to get it into good condition than if we commenced at once. You must make up your minds to spend at least 8000£. to 10,000£. in the mine before we can make great returns, and, as I have always explained, it will take eighteen months to two years to develop the unexplored ground."

Mr. MARSHALL seconded the motion.

Mr. BEBO said that if only 38,553 shares had been bona fide subscribed by the public, was there included in that the 35,000 shares which the prospectus stated had already been subscribed. If that were the case was not the statement in the prospectus wrong and misleading. He asked whether the late directors of the company after the allotment to the public did not subscribe for shares for which they paid out of the assets of the company, and if so had any proceedings been taken against the directors for the recovery of those sums. He should like to know whether there was any proposition before the board for amalgamating with another company called the California Gold Company.

Mr. SMITH asked whether the money proposed to be raised was sufficient to work the mine properly, and to bring it into a dividend-paying state. If the directors were of that opinion the shareholders ought to raise the money, and he would be very glad to help them.

Mr. BEBO asked whether Mr. Beal obtained his shares as an original shareholder or 2s. 6d. on the Stock Exchange.

Mr. SMITH did not think any shareholder had a right to ask another shareholder how he obtained his shares.—Mr. COOK said that there was cause for considerable dissatisfaction with the members of the former board. Mr. Bebo gave a bond for 10,000£., which had not been in any way redeemed. He hoped the present directors would see their way to take very strong action in the matter. He did not think the taking up of a number of shares by the friends of Mr. Bebo was exactly a redemption of the promise that had been given. He should like to know whether the proposition made to join the California Company had been proceeded with, and if not, why not, because it appeared to him that there was no very desirable proposition. He believed the present board of management were now doing their very best, and thought the shareholders should back them up.

Mr. BEBO said that he had not received a farthing promotion money. It had been stated that in consequence of the present board of directors coming into office certain shares had been sold, and he had pocketed the money. He defied any shareholder in that room or anywhere to prove that he had sold a single share. The statements which had been made in the papers had been most misleading from first to last, and he had an action for libel pending against one. With regard to the promotion the mine was brought to him by a gentleman in that room, and he did assist in bringing the company out, but was a very serious loss to him. Mr. Bebo proceeded in a rather excited manner to refer to some personal matters, but the CHAIRMAN ruled that they did not form a portion of the business of the meeting.

Mr. BEBO asked if the new directors had been legally appointed.

The CHAIRMAN: Certainly. With regard to the questions of Mr. Beal, the directors were of opinion that they were only asked with the view of eliciting information, and otherwise promoting the actions taken on behalf of shareholders, and therefore he declined to answer them. (Cheers.) He knew personally how very industrious Mr. Beal had been in bringing this company to grief, or into litigation or winding up. (A voice, "Wreck.") That was a word he certainly would not use, but Mr. Beal had been hard at work circulating shareholders, and the result was his action on behalf of 10 shareholders, holding in the aggregate 155 shares. With regard to the question whether the money proposed to be raised would be sufficient, it would be amply sufficient, and his authority for stating that was their resident superintendent and confidential financial agent at the mine. With regard to the California property, negotiations had been going on for some time as to amalgamation, and if satisfactory terms could be arranged amalgamation would be no doubt a most desirable thing, as one large property under one management could be more economically worked than two separate undertakings. Mr. Bebo asked whether Mr. Beal was an original shareholder? Mr. Beal was not an original shareholder, but had purchased 10 shares in the ordinary way.

Mr. HENDERSON asked how it was proposed to raise the debentures?—The CHAIRMAN replied that they would be raised in bonds of 50£. and multiples, and would bear 10 per cent. interest.

Mr. FAGAN said he thought the mine and property they had got, with 10,000£. or 15,000£. spent on it in eighteen months or two years time spent in opening up the levels, would be one of the best mines in Kansas. He had been connected with the mine since 1863, and had made a net profit out of it of \$450,000, all of which had passed through the hands of the bankers. The condition of the mine at the present time was simply that they had only got 600 ft. of ground that they could work. If they could run their levels and cross-cuts and get the veins open they had about 4000 ft. of virgin ground. They had only to run cross-cuts and sink some shafts on the western portion of the property, and then they would be able to run at least 100 stamps. The mill wanted some 2000£. or 3000£. expended on it, and when that was done he thought they would be able to pay 15 or 20 per cent.

The resolution was then put to the meeting and carried unanimously.

A vote of thanks to the chairman and directors terminated the proceedings.

WHEAL GRENVILLE MINING COMPANY

The ordinary general meeting of shareholders was held at the offices of the company, Union-Court, Old Broad-street, on Thursday, May 13, 1882.

Mr. R. W. GOOLD in the chair.

The notice convening the meeting having been read, the minutes of the preceding meeting were read and confirmed. The agents' report and the statement of accounts were taken as read.

The CHAIRMAN said he met the shareholders with more than ordinary satisfaction on this occasion, because he believed there would be found in the report and accounts, which had been circulated amongst them, abundant evidence that the prognostications that he had ventured to make from time to time with regard to Wheal Grenville had been in no way over sanguine, and that they were in no way disappointed with regard to them. He had often said that Wheal Grenville would take a foremost place amongst the mines in Cornwall, and there was ample evidence in the report that it had done so. He took it that the report which was now presented was the most favourable one that the shareholders had received since his connection with the mine. It contained two or three remarkable statements, which should be borne in mind. In the first place, Capt. Hodge, in the second clause in his report, stated what had never been stated to them before—that they had a very large piece of ground in the 178, or between that and the 165, worth 50£. per fathom. At the last meeting the same spot was reported to be worth 30£. per fathom for the width of the drivage, which was then only 6 ft.

Since then the lode had been cut through, and the north and south walls had been seen. Again, there was the statement that in the 165 east the drift was worth 30£. per fathom, coupled with the most remarkable intelligence that to the east of the cross-course they had a piece of ground cut open to its full width for 40 fms. in length, the whole of which is worth 30£. per fathom. Such a thing as that had never been reported before in the history of the mine, at all events since he had anything to do with it. Then Capt. Hodge stated that their reserves were never more than at the present time. More than twelve months ago Capt. Hodge said that if they were to stop driving every end, to stop sinking the shaft, and to make no further explorations, but to rest upon their oars, they had reserves enough already disclosed to carry them over for years, and at a subsequent meeting he stated the term was equal to three years. He said now that the reserves were never more than at the present time, and he (the Chairman) was prepared to say that they were never so large. He looked upon these reserves as a commercial man would look upon his banker's balance, to be drawn on by-and-by.

ment Wheal Grenville had attained a position only exceeded by East Pool and Dolcoath. Those were two quite exceptional mines, and he found that of the ten English tin and copper dividend-paying mines which had paid dividends this year, Wheal Grenville stood next to them. East Pool had made a profit of 10s. 11*1/2*d. in 1*1/2* on the tin raised, while they had made a profit of 6s. 4*1/2*d. in 1*1/2*. A neighbouring mine working on the same lease, which had sold 120 tons of tin in the quarter, had done so with a profit of 4s. 10*1/2*d. in 1*1/2* only. This showed the careful and economical manner in which Capt. Hodge managed the property; but he was always careful that economy should not be practised at the expense of efficiency. His anticipations with regard to Wheal Grenville had been perfectly justified, and he believed that they had got a great, a valuable, and a lasting property in the mine. There was one cloud at the present time. As everybody knew the "bully" and "beast" had between them knocked down the price of tin, so that it might be a difficult problem to solve how they were to keep up 7s. 6d. dividends at the next meeting; but he was under the impression that in the current quarter they would see a moderate rise in the price of tin, and that at all events they would not get less than 60*1/2* per ton for their tin. They might fairly assume that in the next 16 weeks they would get 132 tons of tin, which at 60*1/2* per ton would give them 7920*1/2*, and this would, at the present rate of expenditure, leave them a balance of 2320*1/2*, or more than sufficient to pay a 7s. 6d. dividend. They had now in hand 2715*1/2*, 12*1/2*, 5*1/2*, so that they could pay a dividend of 7s. 6d. per share and carry forward 485*1/2*, 12*1/2*, 5*1/2*. He thought it desirable that they should carry forward a good balance, and that they should from time to time lay by a sum towards the extra expense which must sooner or later be incurred in opening up east East Grenville. The Chairman then moved the adoption of the accounts and the agents' report.—Mr. JOLLY seconded the motion, which was carried unanimously.

The CHAIRMAN then proposed the declaration of a dividend of 7s. 6d. per share payable forthwith, remarking that the amount to be divided would have been derived from the actual working of the mine, leaving the 45*1/2* realised by the sale of the old engine to be carried forward.

Mr. F. G. LANE, in seconding the proposition, said their 150 fathom level was now within 45 fathoms of the perpendicular East Grenville shaft. The lode had not been seen in that shaft, and it could not be said whether their 150 fathom level would drain the East Grenville Mine. It was a very important consideration for them whether or not they should commence to re-work East Grenville, and it occurred to him that it would be of advantage to this company to raise capital to work the mine very soon. The adjoining mine was South Frances, which was becoming richer as they approached the East Grenville seat.

The CHAIRMAN added that they would have to deal with this question sooner or later, but for the present he thought it would be better to wait and see whether the 150 fathom level would drain East Grenville. Since their last meeting they had had the misfortune to lose by death their mining engineer in Cornwall, Mr. Hocking, and their secretary in London, Mr. Mitchell. The committee had made arrangements for carrying on the business in London, and had arranged with Mr. Sydney W. Jackson, a professional accountant, to examine the accounts month by month, and to certify to their correctness. This would only cost 10*1/2* 10*1/2* a year, and it was certainly very desirable that their accounts should be examined by a public auditor. No arrangement had been made with regard to the appointment of an engineer, but Captain Hodge was quite competent to look after the machinery, and had always done so most cheerfully.

The dividend recommended was then declared.

Mr. LANE proposed cordial vote of thanks to the chairman, remarking that since the death of Mr. Mitchell, Mr. Gould had attended the office every day, and had spared no pains to ensure the success of the company.

Mr. BUMPUS seconded the proposition, which was supported by Mr. JOLLY, and carried.

The CHAIRMAN having briefly returned thanks, the meeting closed.

LADY BERTHA UNITED COPPER AND TIN MINING COMPANY.

A meeting of shareholders was held at the Cannon-street Hotel, on Tuesday, called by Mr. WATSON SMITH, a shareholder, and the former secretary, who stated that he represented holders of over 4000 shares in the company, "to consider the present unfortunate position of the company, and if deemed necessary of appointing a committee of investigation to enquire into its past management and present position, and to report to the shareholders the result of their investigation, and also to consider as to the removal of the present directors."

Mr. WATSON SMITH occupied the chair at the commencement of the proceedings without being voted into it, which position as will be seen he had to vacate.

The CHAIRMAN said the meeting was called by himself as representative of a large number of shareholders to consider the position, and whether it was not necessary to have a committee of investigation to ascertain how the company stood at present. From information which he had obtained he believed the company was in a sad plight. The shareholders had no doubt received his circulars of April 13 and 17, and also the reply of the directors.—Mr. J. WALKER asked Mr. Smith why he had not sent a requisition to the directors to call a meeting of the shareholders, but received no answer.

Mr. T. EYRE FOAKES, the Chairman of the company, said that some time since the directors said they were ready to call a meeting, which would have been much better than to have an informal meeting of this kind, which might pass whatever resolution it pleased, and damage the company in the eyes of the public, and was a serious wrong to the shareholders. If the directors had received such a requisition, not necessarily signed by the requisite number of shareholders, but by any respectable number of shareholders, they would have set it their duty to call a meeting to meet the mis-statements which Mr. Watson Smith had made in his circular, and put proper accounts before the meeting. He considered the course taken by Mr. Smith was calculated to damage the company.

The CHAIRMAN said he did not see what objection there could be to a committee of investigation if the directors were not afraid of having things investigated. What he wanted was to have the whole of the matters thoroughly enquired into, and then the shareholders would be able to see whether the company was in a good condition or bankrupt position. He asked what had become of the 1700*1/2* assets which at the last meeting the company were stated to possess? He considered that the company had drifted into its present position entirely through mismanagement, and the shareholders had paid dearly for that mismanagement.

Mr. TAPP, a holder of 250 shares, complained of a statement in the circular of Mr. Smith, to the effect that he (Mr. Tapp) had paid nothing into the company for his shares. Now, the fact was that he had bought his shares and paid for them, and he considered such a statement should never have been made, as it led to the inference that he had obtained his shares by some improper means.

The CHAIRMAN said he had no wish to convey any such impression, but Mr. TAPP was not satisfied with this answer.

Mr. HENDERSON thought it would have been much better if Mr. Smith had not taken the chair, but had allowed the meeting to appoint a shareholder.

Mr. TAPP moved, and a SHAREHOLDER seconded, that Mr. Henderson should take the chair.—Mr. SMITH had then to resign the position of Chairman.

Mr. HENDERSON then took the chair, and pointed out that this was an informal meeting, and it was a question for the shareholders to decide whether it would be better to dissolve the present meeting, and request the directors to call a properly constituted meeting.

Mr. FOAKES said the directors would refuse to recognise any committees appointed by this informal meeting, but they would take care that a meeting should be called within a short space of time, when every detail would be given.

Mr. F. HORN moved that the meeting be dissolved, and that the directors be requested to call an extraordinary general meeting of shareholders at an early date to consider the position of the company, and the steps necessary to place upon a successful footing.—Mr. J. WALKER seconded the motion.

Mr. WATSON SMITH said his great object was to get a committee of investigation, and suggested that words to that effect should be added to the motion, but the feeling of the meeting was in favour of leaving the matter in the hands of the directors.

Mr. CHIPPER, of Tavistock, said the mine was a good one, and he should be very sorry indeed to see the company wrecked by Mr. Smith.

The resolution was then put and carried, and the meeting broke up.

NORTH D'ERESBY MOUNTAIN LEAD COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, New Broad-street, on Tuesday,

Mr. JOHN W. WILLIAMSON in the chair.

Mr. E. BEAZLEY (the secretary) read the notice convening the meeting, and the minutes of the preceding meeting were read and confirmed. The report and accounts were taken as read.

The CHAIRMAN said, as the shareholders were aware, the mine itself had been stopped for a month or two, but the prospects as far as they could see, and as far as they were informed by those competent to judge, were really very favourable; but it was the old story of working with too small an amount of capital. They had endeavoured to make the capital go as far as possible. The capital allotted was only 6580*1/2*, out of which 5000*1/2*, was for the purchase of the mine. That amount represented money in the balance-sheet, but as a matter of fact the vendors had such faith in the mine that they agreed to accept 4000*1/2* in shares and 1000*1/2* in cash, and of this latter amount only 500*1/2* had been paid, so that the vendors would have got very little indeed for their property if it did not turn out profitably. The nominal capital was 10,000 shares, so that they had 3420*1/2* allot. A circular had been sent to the shareholders inviting applications for 1000*1/2* of these shares, but only 400 shares had been applied for. If it were thought that that was all they would receive he would have had to ask the advice of the shareholders as to whether or not they should allot those shares, seeing that to the best of their judgment 1000*1/2*, was required, or whether they should allow the mine to be shut up until the arrival of better times; but since the circulars were sent out a few days ago, they had recently visited and inspected the mine, had undertaken to place 1000 shares. Of course, they would have to pay a commission, but it would be nothing very extravagant. This would practically give them 1400*1/2*, to carry on the mine with, and they would, therefore, have ample funds, as according to the reports received by the directors, it would not require more than that amount to bring the property into a dividend-paying state. Of course, the hand-to-mouth way in which they had been obliged to work had been very expensive, and it was found impossible to go on any further without an engine for pumping and dressing purposes. They had had the offer of an engine and boiler complete for a sum of 95*1/2*, which, according to the statement of their engineer, would save them fully 200*1/2*, for they would have to give from 300*1/2* to 400*1/2* for a

new engine of the kind required. They were informed that this engine could be put in thorough repair for 8*1/2* 10*1/2*, so that for about 100*1/2*, they would have an engine which would do all that they wanted to do, and they would still have from 120*1/2* to 130*1/2*, to carry on the operations. Besides all that there was a very considerable pile of ore lying on the bank. They could very soon put up a dressing-floor and jiggers to render the ore marketable. The lode was yielding about 13 cwt. of lead to the fathom at the time when operations were suspended, and this would at least go towards the payment of the expenses. The vendors, who had so far only received 3*1/2* 4*1/2* for their property, were naturally anxious to see the mine brought to a successful position, and whenever the company had been short of cash, one of the vendors had always been ready to contribute to help them over the stile. They had acted very liberally towards the company, and would be quite as pleased as the other shareholders to see it a success. The Chairman then moved the adoption of the report and accounts.—Mr. ALFRED E. COOKE seconded the motion.

A GENTLEMAN then said he visited the mine a short time ago, and was very much pleased and surprised at the appearance it presented. The workings were very shallow, but the stuff he saw coming away from the lode was becoming very rich. It was a very inexpensive mine to work, and they had the hill rising up behind them, which would give them an immense amount of backs. The operations had been carried on in a desultory manner, and he was very glad to hear that they had now such a favourable opportunity of buying an engine. After he saw the mine he had made a voluntary arrangement with the secretary to place 1000 shares, and he had such a high opinion of the value of the shares in future that he was willing to accept the small commission which would be due to him in shares. He was sorry to see that the shareholders had not responded more liberally, and he trusted that a further effort would be made to induce them to assist the company, now its success was so absolutely assured as it seemed to be.

The reports and accounts were unanimously adopted.—Mr. Scott thought an engine should have been obtained at an earlier stage.

Mr. COOKE pointed out that the agent was anxious to prove the mine before the erection of machinery. The engine would answer all the purposes required.

Mr. BEAZLEY explained that the earlier workings were in dry ground when a pumping-engine was not required. It was only with the sinking of the shaft that the water had increased.

A vote of thanks to the Chairman closed the proceedings.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. CLXLVI.

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,
Mining Engineer, Wakefield.
(Formerly Student at the Royal Bergakademie, Clausthal.)

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SHAFT CONVEYANCE

With respect to shaft conveyance we can at the outset distinguish two classes, those in which the shaft is perfectly vertical, and those in which the shaft is more or less inclined. The shafts of almost all collieries are included in the first class, whilst the second includes the majority of all shafts or lodes, though the present tendency, even in metalliferous mines, is to have the shafts driven vertical.

Another mode of distinction is of great importance. Whether or not the mineral is raised to the surface in the same vessel into which it is first filled. The former is the custom in almost all collieries, and is extending amongst metalliferous mines.

The German miners distinguish two classes of winding machinery—1^o. Those in which the winding roll or drum lies directly over the shaft, being classed under the general term of (Haspel) windlass or winch.—2^o. Those in which the winding roll or drum lies sideways from the shaft, being classed under the terms (Gopel), winding engine, gin, or whin. This last distinction, which we shall follow, is not in itself of much importance, except that it enables us to classify the arrangements in the shaft and at the pit top.

1^o.—Winding arrangements in which the winding apparatus is placed immediately over the mouth of the shaft. Under this are included all such winding apparatus known as windlasses, winches, turnstakes, drawing stowes, jack rolls, &c.

The following calculations are of importance in considering the capabilities of such winding arrangements. The product of the velocity with which the mineral is raised in the shaft into the length of the winch handle is equal to the product of the radius of the winch barrel into the velocity with which the winch handle is turned, also the work in foot pounds per minute, done by the man at the winch handle is equal to the weight raised in pounds multiplied into the velocity in feet per minute with which the weight is raised in the shaft. The principal data given are usually the daily output and the depth of the shaft, and the length of the pause between two windings. From the first two of the data the number of foot pounds of work per minute to be effected through the machine are obtained, and either the total weight to be raised at one time or the speed of winding may be fixed at pleasure, from which the other is thus determined. If the velocity of winding is assumed at pleasure this divided into the depth of the shaft gives the time occupied by one winding, to which must be added the length of the pause between two successive windings, in order to obtain the total or gross time required for one winding. This result divided into the length of working time per day will give the total number of windings per day, and this divided into the required daily output gives the load to be raised per winding. Again, if the load per winding be given this divided into the required daily output gives the number of windings per day. This number must then be multiplied into the length of each pause, and the product subtracted from the total working time per day, which gives the available time per day for winding. This latter divided by the number of windings per day gives the time per winding. This time in seconds or minutes divided into the depth of the shaft in feet determines the velocity of feet per second or per minute of winding.

In metalliferous mines in the case of windlass arrangements the length of the pause between two successive windings, according to Von Hauer, varies from 1 to 3 minutes when the material is filled into the kibble during winding, and from 3 to 6 minutes when the mineral has to be filled into the kibble during the pause. According to the same authority the velocity of winding when the shaft is without guides varies between 2 ft. and 4 ft. per second, and when the shaft is provided with guides the speed may be increased to 12 ft. per second. Weisbach gives 2*1/2* ft. per second as an ordinary average. Von Hauer gives the following as the most suitable dimensions of the windlass. Radius or length of winch handle 16 ins., with 48 revolutions per minute. The former varies from 11 ins. to 22 ins., and the speed of rotation from 15 to 19 revolutions per minute, assuming 16 ins. as the average length of the winch handle, or from 1 ft. to 6 ft. per second as the velocity in the circle described by the handle of the windlass. Weisbach gives as an average for the latter 2*1/2* ft. per second, and for the former 16 ins. Professor Smyth gives 3*5/8* ft. per second as the average velocity in the circle described by the handle of the windlass. Weisbach gives 7 ins. for the diameter of the windlass. Radius or length of winch handle 16 ins., with 48 revolutions per minute. The former varies from 11 ins. to 22 ins., and the speed of rotation from 15 to 19 revolutions per minute, assuming 16 ins. as the average length of the winch handle, or from 1 ft. to 6 ft. per second as the velocity in the circle described by the handle of the windlass. Weisbach gives as an average for the latter 2*1/2* ft. per second, and for the former 16 ins. Professor Smyth gives 3*5/8* ft. per second as the average velocity in the circle described by the handle of the windlass. Weisbach gives 7 ins. for the diameter of the windlass. According to Von Hauer this varies from 4 ins. to 5*1/2* ins. for hemp ropes, and 5*1/2* in. to 7 in. for wire rope. Professor Smyth gives 6 ins. as a usual diameter of the barrel. When the winch is arranged for more than two workmen (one at each handle) the diameter of the barrel is increased. At the Mansfield copper mines, when two workmen are intended to be employed at the windlass the usual diameter of the barrel is 13 ins., when three men are employed 20 ins., and when four men are employed 26 ins. When the depth from which the mineral has to be raised is considerable the diameter of the barrel must be correspondingly large, since with a small diameter the barrel must be of inconvenient length unless the rope is to be coiled on itself several times. When this takes place the effective leverage at which the men work is lessened, though this disadvantage is partly compensated for by the fact that gross weights to be raised with the smaller leverage is less by the weight of the rope which is coiled round the barrel. A great depth also lessens the net effect of the workmen, owing to the weight of the rope to be raised. Weisbach gives as the daily effect of a man working a crank in round numbers as 1,200,000 ft. lbs., which is approximately the same as that given by Rankine. Von Hauer gives 6 to 8 kilograms, or 45 to 60 ft. lbs. per second as the effect of man turning a winch handle. At the Freiberg mines it is assumed that two men can raise 120 kibbles of mineral in an 8-hours shift, the weight of each kibble amounting to 90 lbs. to 100 lbs.; this gives 1,500,000 ft. lbs. per 8 hours shift for two men, or 750,000 ft. lbs.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergrath Dr. von Groddeck, Director of the Royal Bergakademie, the Harz, North Germany.

per man. In the Spanish mines, where the men employed at the windlass for raising the ore are kept solely at this work, the daily average per man is said to reach 2,000,000 ft. lbs. Professor Smyth gives as data for a 10 hours shift at the windlass a speed of 210 ft. per minute, and a constant pressure upon the windlass handle of 12 to 14 lbs., or about 1,600,000 ft. lbs. per day. For most cases it appears best to assume the average at 800,000 ft. lbs. per day. The useful effect is also dependant on the depth of the shaft, since the deeper the shaft so much less will be proportionately the number of pauses per day.

When the shaft is very deep the mean effective diameter of the barrel will exceed the actual diameter, on account of the rope being several times wrapped upon it. The excess of the mean effective diameter above the actual diameter of the barrel is obtained by dividing the product of the length of the rope into the square of the diameter of the rope by twice the product of the circumference of the barrel into the length of the barrel.

When a kibble is hung from each end of the rope it will be impossible to have more than one thickness of rope coiled round the barrel.

The number of coils round the barrel must be such that the two kibbles when passing will hang clear of each other. The minimum number of coils is obtained by dividing the width over all of the kibble, measured in the direction of the axis of the barrel by the thickness of the rope. As the coils move along the barrel towards one end or the other, according to the direction of rotation of the barrel, the barrel must be made of such a length as to allow of this. The necessary length of the barrel is obtained by dividing the depth of the shaft by the circumference of the barrel, and multiplying the quotient by the thickness of the rope. To this must be added the length coiled upon the barrel, which is obtained by multiplying the diameter of the rope by the number of coils. If the rope is made to coil upon itself at each end, which it can only do at each end for a length equal to half the length occupied by the coils on the barrel, the necessary length is merely that obtained by dividing the depth of the shaft by the circumference of the barrel, and multiplying the quotient by the thickness of the rope.

The following are the general points in the construction of the pit jack roll or windlass. The barrel of the windlass is made of wood. The axle or axis is formed in various ways. Sometimes it is made to pass through the barrel from end to end. In other cases the iron axis is in two pieces, one at each end. The portion inserted in the barrel is square shaped in section, and tapers gradually to one end; the opposite end being also square in section but straight. The portion between the two is turned down to from $\frac{3}{4}$ in. to $1\frac{1}{4}$ in. in diameter for the journals. Sometimes the axis is attached to the end of the barrel by bending it at right angles and screwing one portion to the barrel, or fitting it in the end of a slit formed in the end of the barrel. A hoop of iron is usually driven on hot at each end, and serves to hold tight the axis in the end of the barrel. The handle is formed out of $\frac{3}{4}$ in. to $\frac{5}{8}$ in. round iron, being bent

Registration of New Companies.

The following joint-stock companies have been duly registered:—

SOUTH AFRICAN PIONEER POWDER FACTORY (Limited).—Capital 40,500*l.*, in shares of 1*l*. The manufacture of gunpowder, nitro-glycerine, dynamite, &c., in the South African Republic. The subscribers (who take one share each) are—F. Turner, Reform Club; C. Reade, Kellett-road; W. M. Nutall, Croydon; A. Storer, The Albany; O. Shore, Reform Club; F. J. Hanley, 27, Nicholas-lane; H. J. Edger, 27, Nicholas-lane.

THE LONDON AND THAMES HAVEN WHARFAGE COMPANY (Limited).—Capital 40,000*l.*, in shares of 1*l*. To acquire and carry on the business of the Petroleum Storage Company (Limited). The subscribers (who take 100 shares each) are—E. Hunter, Blackheath; W. H. Simpson, 31, Lombard-street; J. Irvine, Liverpool; A. Stewart, Liverpool; J. B. Martin, Victoria Mansions; W. Eckersley, 4, Westminster Chambers; W. Hunter, 57, Moorgate-street.

THE BLACKHEATH COLLIERY COMPANY.—Capital 10,000*l.*, in shares of 2*l*. To purchase or otherwise acquire the lessee's interest in the mines, beds, seams, and strata of coal situated in the Manors of Henshaw and Melkridge, parish of Haltwhistle, Northumberland, and any other collieries or mining properties for the purpose of prosecuting the business of coalowners, colliery proprietors, winners, workers and vendors of coal, coke, ironstone, fire-clay, and any other mineral substances whatsoever. The subscribers (who take one share each) are—J. Dickenson, Alston, no occupation; J. Walton, Heton, M.E.; T. Walton, Alston, M.E.; J. Kelph, Carlisle, no occupation; G. T. Nuthank, Penrith, yeoman; J. J. Millicum, Hexham, M.E.; A. Bowman, Dumferline, no occupation; T. S. Nuthank, Penrith, yeoman. No Articles of Association have been registered.

THE NORTH WESTERN OF URUGUAY RAILWAY COMPANY (Limited).—Capital 1,410,000*l.*, in shares of 20*l*. To take over, maintain, and work the lines of the North-Western Railway of Monte Video Company (Limited). The subscribers (who take one share each) are—F. W. Brind, 6, Gresham House; H. S. G. Barrow, West Dulwich; E. J. Davis, Staplefield; G. Herring, 6, Park Crescent; A. Ricardo, 11, Angel-court; W. T. Hare, 118, Pall Mall; C. Morrison, 53, Coleman-street.

THE ANGLO-SWEDISH COMPANY (Limited).—Capital 50,000*l.*, in shares of 10*l*. The business of oil and manure manufacturing. The subscribers (who take one share each) are—J. W. Radcliffe, Oldham; D. Matheson, Manchester; S. R. Platt, Oldham; J. Radcliffe, Conway; J. Radcliffe, Wetherby; H. M. Radcliffe, Oldham; J. Ashworth, Lordship-lane; J. W. Lord, Bow.

THE INDIAN AND ORIENTAL ELECTRICAL STORAGE AND WORKS COMPANY (Limited).—Capital 400,000*l.*, in shares of 5*l*. The business of electricians, mechanical, and chemical engineers, workers and dealers in electrical motive power and light. The subscribers (who take one share each) are—E. Noel, 29A, Grosvenor-square; Lord Cranford and Balcarres, 47, Brook-street; W. M. Bullivant, 72, Church-lane; F. G. Stewart, 14, St. James's-square; J. S. Trotter, 2, Walton-street; A. Trinder, 14, St. Helen's-place; T. M. Collett, Winchester House.

THE ALNWICK STEAMSHIP COMPANY (Limited).—Capital 18,000*l.*, in shares of 100*l*. A shipowner's business, limited to one vessel at a time. The subscribers (who take one share each) are—G. A. Laws, Prudhoe Castle; A. Edwards, 5, Newman's-court; E. Hough, 15, Tower Hill; R. Watson, North Shields; W. Lishman, Fence Houses; G. P. Hall, Winlaton; H. F. Dryden, Newcastle-on-Tyne.

THE PORT NIGEL SYNDICATE (Limited).—Capital 10,000*l.*, in shares of 1*l*. To purchase of the Port Nigel Lead Company (Limited)—in liquidation—or from the company's mortgagees the leases of the Tan-yr-Alt and Tyllian Mines and certain freehold cottages and premises situate in the parish of Llanengan, Carnarvonshire, with the machinery, plant, and materials, and to carry on all operations of a lead mining company, and also of a smelting company in all branches. The subscribers (who take one share each) are—W. Gundry, 7, Draper's Gardens; J. Schofield, St. Stephen's Chambers; H. D. Browne, 10, Draper's Gardens; A. Schofield, 1, Draper's Gardens; F. G. Lane, 4, Austinfriars; W. James, 42, Bush Hill; H. Wilson, 53, Old Broad-street.

THE ORIENTAL COMPANY (Limited). Capital 100,000*l.*, in shares of 1*l*. To acquire, use, and dispose of concessions for public works, trading, or industrial enterprises, &c. The subscribers (who take one share each) are—A. Lowe, 167, Fenchurch-street; C. Harvey, 102, Gloucester-road; T. M. Roxby, Wimbledon; J. B. Fryer, 2, Clifford's Inn; H. Hall, 36, Old Jewry; F. E. Mardon, 187, Brixton-road; J. Davies, 99, Gresham-street.

THE "BRUSH" MIDLAND ELECTRIC LIGHT AND POWER COMPANY (Limited).—Capital 250,000*l.*, in shares of 5*l*. The business of electricians in all branches. The subscribers (who take one share each) are—A. W. F. Greville, Sunninghill; H. Vignoles, 1, Westminister Chambers; H. N. Myers, Brixton; J. D. Shakespear, Empire Club; F. Painter, 2, Moorgate-street Buildings; H. R. Evans, Newport; H. G. Lawson, Oxford and Cambridge Club.

NASMYTH WILSON AND COMPANY (Limited).—Capital 100,000*l.*, in shares of 100*l*. To acquire and carry on at Patricroft an engineering, machinists, iron and brass founders' business. The subscribers (who take one share each) are—H. Garnett, Wyreside; R. Wilson, Patricroft; S. Garnett, Patricroft; R. Nelson, jun., Patricroft; F. N. Garnett, Wyreside; S. A. Garnett, Chester; P. Spence, Manchester; D. V. Stewart, Manchester.

THE DOURY SPINNING COMPANY (Limited).—Capital 60,000*l.*, in shares of 5*l*. Spinning and manufacturing cotton, silk, wool, flax, &c. The subscribers (who take 50 shares each) are—W. Filtre, Preston; P. Schofield, Oldham; T. H. Chadderton, Oldham; W. Turner, Oldham; H. L. Hollingworth, Hollinwood; J. Lord, Oldham; S. Andrews, Manchester.

THE PORTSEA ISLAND GAS FITTING COMPANY (Limited).—Capital 10,000*l.*, in shares of 5*l*. To carry on the business of gas fitters, gas meter makers, engineers, &c. The subscribers are—T. J. Edgecombe, Southsea, 100; E. D. Fenton, Southsea, 20; W. D. King, Farlington, 20; J. Baker, Portsmouth, 20; W. V. Greetham, Southsea, 20; S. B. Darwin, Southsea, 20; H. C. Ward, Putney, 50.

HENRY CHALK, WEBB, AND COMPANY (Limited).—Capital 100,000*l.*, in shares of 2*l*. The business of manufacturers and dealers in diacromatised wood, marble, leather, paper, and similar materials. The subscribers (who take one share each) are—H. Morand, Brixton; R. H. Bishop, 210, Liverpool-road; R. B. Tennant, Lee; J. Shelds, Islington; E. P. Scott, South Molton-street; S. J. Pasley, Brixton; H. Chadwick, Highbury.

LION D'OR RESTAURANT (Limited).—Capital 100,000*l.*, in shares of 10*l*. The business of restaurateurs, wine, spirit, and beer merchants, &c. The subscribers (who take one share each) are—C. M. Fabre, 32, Chepstow-place; W. Hope, Army and Navy Club; G. Kniven, 179, Regent-street; W. H. Robinson, 30, Coleman-street; F. L. Hancock, Barnes; G. Pickford, 75, Coleman-street; J. F. Tregard, 29, Falcon-square; G. W. Jones, Camberwell.

R. N. CUNNINGHAM AND COMPANY (Limited).—Capital 200,000*l.*, in shares of 5*l*. and 1*l*. The business of preservers, importers, and dealers in tinned ox tongues and other provisions. The subscribers are—W. W. Taylor, 13, Ladbrooke Gardens, 100; T. G. O'Donoghue, 20, George-street, 500; C. H. D. Hunter, Paysandu, 500; J. Rhodes, Tottenham, 50; G. G. Boulton, 40, King William-street, 50; E. H. Hall, Lee, 2; J. Tymms, Forest Gate, 1.

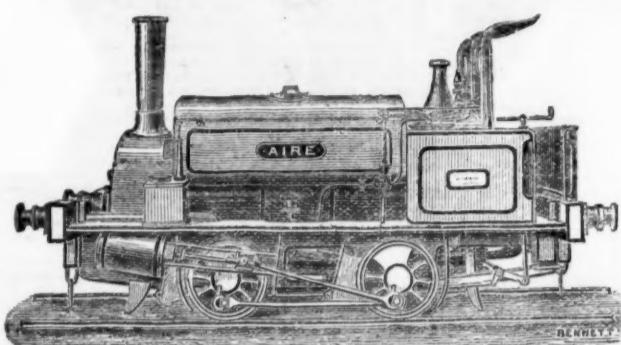
CITY OF MANCHESTER DISCOUNT CORPORATION (Limited).—Capital 100,000*l.*, in shares of 5*l*. A discount and financial business in all branches. The subscribers are—C. Harrop, Manchester, 1; E. Hampson, Manchester, 20; T. R. Jackson, Cheetham, 1; T. Manyon, Manchester, 1; T. H. Taylor, Manchester, 10; J. Halladay, Manchester, 20; J. Sutcliff, Manchester, 20.

THE HARRIETT SILVER MINING COMPANY (Limited).—Capital 250,000*l.*, in shares of 1*l*. To purchase, work, and develop, sell, let, or otherwise dispose of a silver mine, situated in the State of Colorado, and any other mining, or mineral properties, rights, privileges, &c., in the United States generally. The subscribers (who take one share each) are—W. R. Seymour, 1, Howick Place, gentleman; F. C. Howard, 34, Foststone-road, gentleman; J. Coulart, Peckham, shorthand writer; F. D. Webb, 18, Victoria-square; O. H. Howarth, 45, Warwick-road, C.E.; J. Wright, 11, Edwards-street, clerk; F. J. Poidevin, Forest Hill, gentleman. The subscribers will elect the first directors, whose number must not exceed 10 or be less than 3; qualification 100 fully paid up shares.

NEW BAGWORTH COAL COMPANY (Limited).—Capital 12,000*l.*, in shares of 10*l*. To acquire by purchase the Bagworth Colliery, situate in Leicestershire, according to the provisions of a contract entered into with W. Spencer, of Leeds, for the purpose of winning, working, raising, and selling coal and other minerals, ironstone, and clay, and carrying on all operations connected with mining company. The subscribers are—E. K. Fisher, Market Harborough, iron merchant, 100; H. S. Gee, Leicester, manufacturer, 100; F. Hington, Leicester, bank manager, 100; W. Spencer, Leicester, mining engineer, 50; P. Mayetson, 9, Upper Wimpole-street, 200; T. Burge, 3, Austin Friars, stockbroker, 400; J. Coates, 99, Gresham-street, gentleman, 200.

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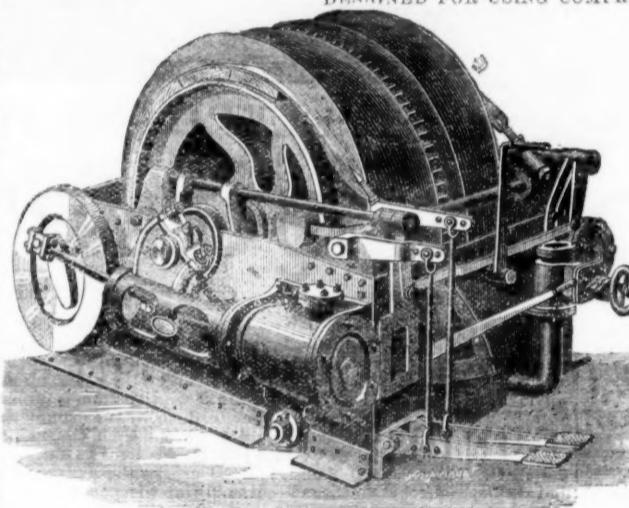
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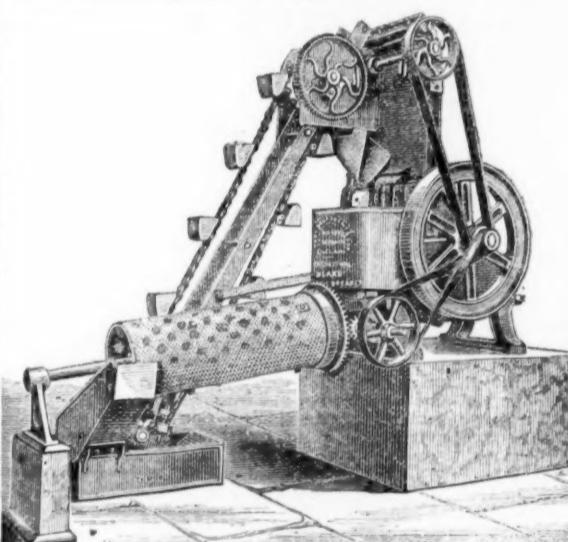
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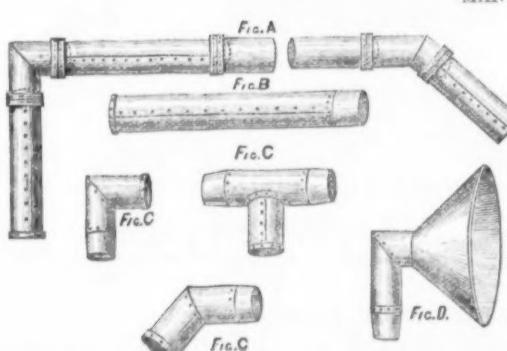
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Fig. A.—Shows the tubes adapted for any variation in direction.

Fig. B.—Straight length of tube.

Fig. C.—Different angle bends.

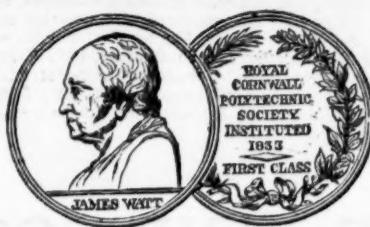
Fig. D.—Is a hopper to receive air at top of shaft.

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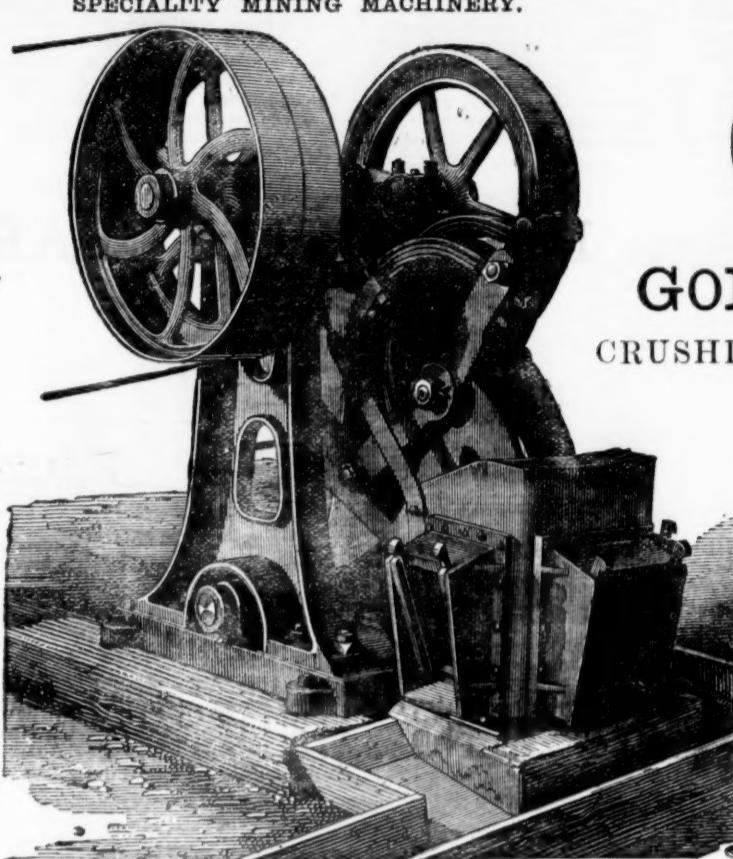
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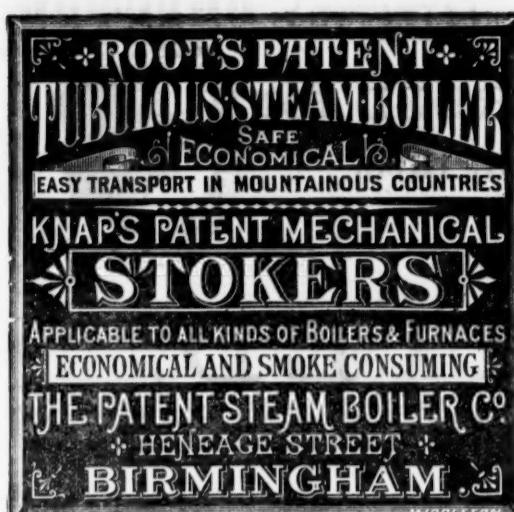
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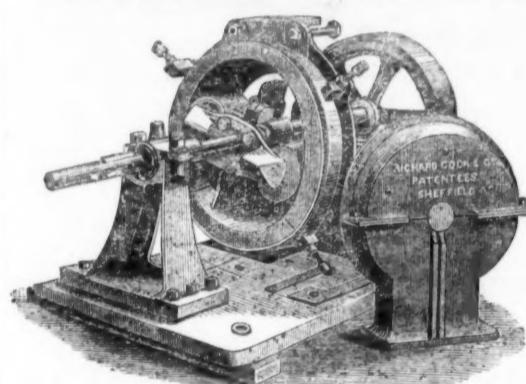


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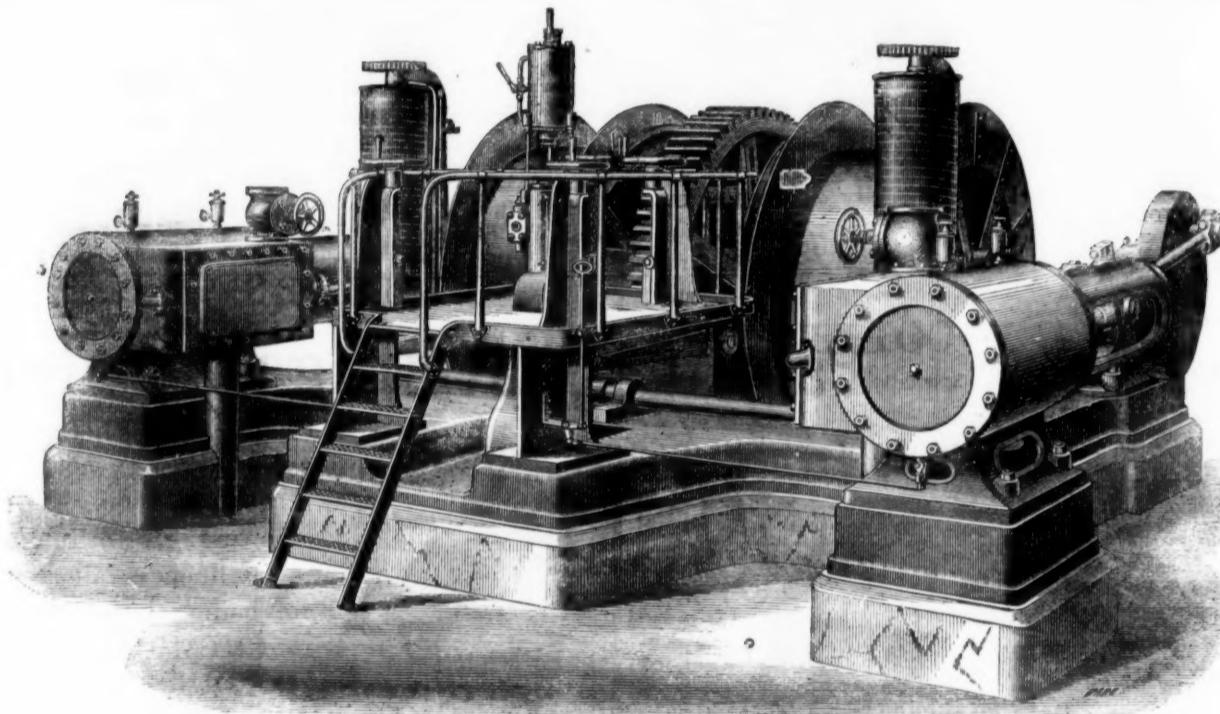
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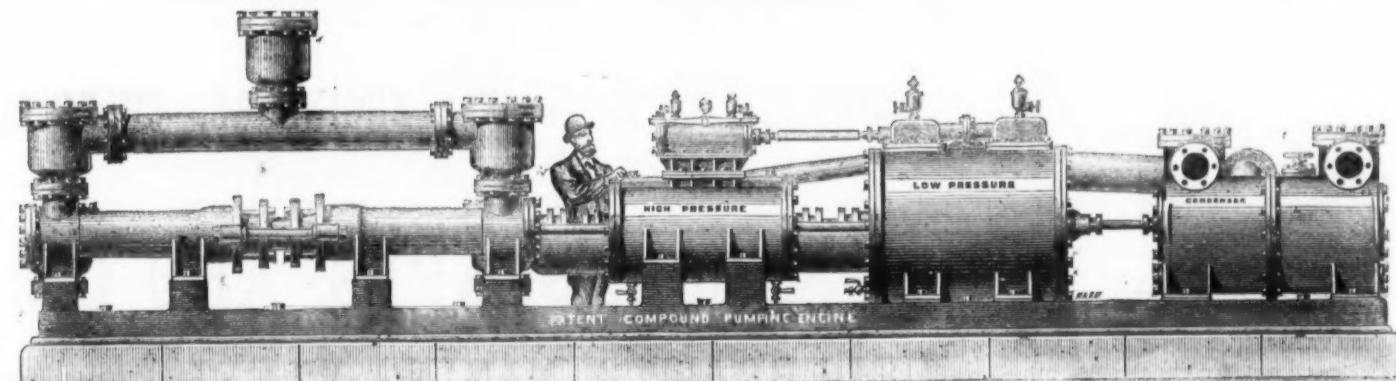
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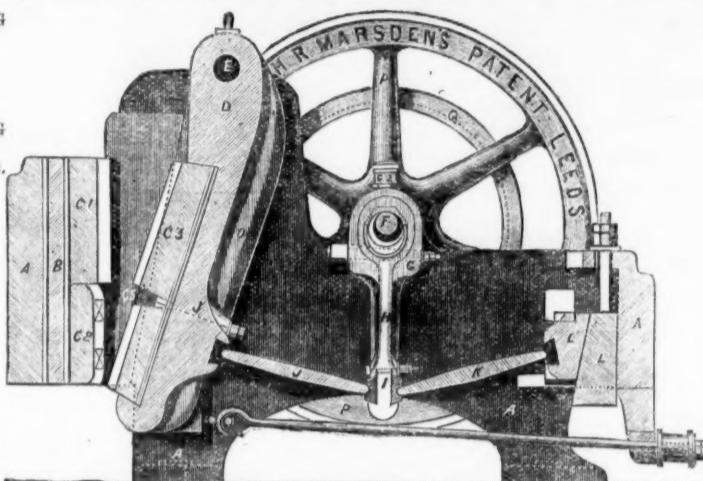
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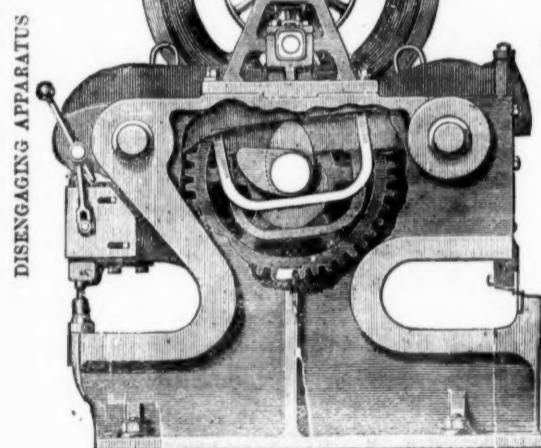
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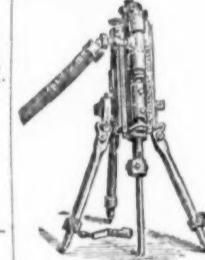
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